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SECOND ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF THE

STATE OF OHIO

FOR THE

YEAR ENDING OCTOBER 31, 1887.

COLUMBUS:
MYERS BROTHERS, STATE PRINTERS,
1888.

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RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN ITS ANNUAL REPORT.

Resolved, That no papers shall be published in the Annual Report of this Board, except such as are ordered or approved for purposes of such publication by a majority of the members of the Board; and that any such paper shall be published over the signature of the writer, who is entitled to the credit of its production, as well as responsible for the statements of facts and opinions expressed therein.

239609

MEMBERS OF THE BOARD.

	Term expires.
*T. CLARKE MILLER, M.D., Massillon	December, 1887
JOHN D. JONES, M.D., President, Cincinnati	December, 1888
SIMON P. WISE, M.D., Millersburg	December, 1889
D. H. BECKWITH, M.D., Cleveland	December, 1890
THOS. C. HOOVER, M. D., Columbus	December, 1891
H. J. SHARP, M. D., London	December, 1892
W. H. CRETCHER, M. D., Bellefontaine	December, 1893
†HON. J. A. KOHLER	Attorney-General (ex-officio).

C. O. PROBST, M.D., Secretary.

C. C. HOWARD, M. D., Chemist, Columbus, O.

---

*Edward T. Nelson, M.A. Ph. D, Delaware, appointed December, 1887; term expires December, 1894.

† Hon. D. K. Watson, Attorney-General, elected November, 1887.

STANDING COMMITTEES.

Hygiene of Occupations and Railway Sanitation,

JOHN D. JONES, M. D.

Epidemic and Endemic Diseases and Quarantine,

S. P. WISE, M. D.

Topography, Meteorology and Hygiene of Public Institutions,

W. H. CRETCHER, M. D.

Water Sources, Sewerage, Drainage and Disposal of Substances Injurious to Health,

H. J. SHARP, M. D.

Especial Sources of Danger to Life and Health,

T. C. HOOVER, M. D.

Adulteration of Food, Drinks and Drugs,

D. H. BECKWITH, M. D.

Heating, Ventilation, Lighting, and Hygiene of Schools,

T. CLARKE MILLER, M. D.

Vital Statistics, Registration and Nomenclature,

THE SECRETARY.

Finance and Executive,

T. C. HOOVER, S. P. WISE, W. H. CRETCHER.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, *December* 31, 1887.

To His Excellency, J. B FORAKER, *Governor of Ohio:*

SIR: In accordance with Section 8 of the "Act to create and establish a State Board of Health in the State of Ohio," the accompanying report is herewith submitted for the year ending October 31, 1887.

Very respectfully,
C. O. PROBST, *Secretary.*

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GENERAL REPORT.

The Second Annual Report of the State Board of Health of Ohio for the year ending October 31, 1887, is herewith submitted.

The personnel of the Board has not been changed since the last report was offered, Dr. W. H. Cretcher, of Bellefontaine, whose term of office expired December 13, 1886, having been re-appointed by the Governor to fill the vacancy thus created.

The names and addresses of the members of the Board are as follows:

John D. Jones, M.D., *President*	Cincinnati.
T. Clarke Miller, M.D.	Massillon.
S. P Wise, M.D	Millersburgh.
D H. Beckwith, M.D	Cleveland.
Thos. C. Hoover, M.D	Columbus.
H J. Sharp, M.D	London.
W. H. Cretcher, M.D	Bellefontaine.
Hon. J. A. Kohler, Attorney-General *ex-officio.*	

The general plan of work inaugurated the first year has been followed during the present year.

Weekly reports of prevailing diseases have been regularly received from physicians acting as correspondents of the Board, and the weekly Health Bulletin, based on these reports has been published and sent to newspapers, correspondents and others.

This opportunity may be taken to tender the sincere thanks of the Board to those physicians who have in this and other ways, rendered such important aid in our work. Too much cannot be said of the unselfishness of the medical profession in pushing on the work of preventive medicine. Many physicians have sent us requests for circulars, issued by the Board for the prevention of communicable diseases, and have distributed these in their communities. In several instances, where it was not properly understood that these circulars were issued for gratuitous distribution, physicians have forwarded money to purchase them for such purpose. We trust such magnanimity may receive the reward of a due appreciation of its greatness.

The thanks of the Board are also due and are herewith tendered to the public press for the hearty interest it has shown in our work, and for material aid rendered by publishing cirulars and suggestions regarding the public health which have been issued by the Board from time to time.

We are specially indebted to the Ada Record, Middletown Signal, Winchester Times and the Massillon Weekly American, copies of which papers have been sent us regularly during the year.

Reports received from correspondents and others indicate an average condition of the health of the State during the year. The extremely hot weather experienced during the months of July and August was productive of a large number of deaths from cholera infantum and other bowel troubles among children, while the continued drought of the past two months, with the consequent concentration of impurities in streams and wells, has given an increased amount of sickness from typhoid and other fevers.

Diphtheria, which prevailed in many localities at the close of our last report, decreased in prevalence during the succeeding winter, spring and summer months.

Reports indicate a slight increase in the number of cases during the past two months. Scarlet fever has, to a limited extent, been present in some parts of the State during the year. Like diphtheria its time of greatest prevalence was in the months preceding the close of our last fiscal year, since which time it has shown a more or less regular decrease.

Measles was the only disease to assume epidemic proportions during the year. In the months of December, January, February, March and April it swept in a broad wave over the State, affecting thousands of children. Over six thousand cases were reported to the Board during this time, and this represents but a small part of the total number of cases which occurred.

The extent of this epidemic was doubtless due, in part, to the fact that measures for its prevention were seldom or never taken.

This affection is usually so mild that most people have but little dread of it, some even purposely expose their children to the disease at what they consider a favorable time for having it.

Such measures as are used for the restriction of scarlet fever or diphtheria, are rarely or never practiced ; and yet, while the mortality rate of measles is usually low, the aggregate number of deaths, on account of the great number of cases occurring, may exceed that of other diseases of much greater gravity.

We would recommend that in all cases of measles the same precautions be taken for its restriction, as are thought necessary in cases of scarlet fever and diphtheria.

Outbreaks of small-pox have appeared during the year at Cincinnati, Cleveland, Columbus, Dayton, Farmersville, Ansonia, and Switzer.

The histories of these cases offer convincing evidence of the value of preventive medicine, for in no instance did the disease spread beyond the second case.

If health authorities were only as heartily supported by the public in their efforts to restrict and stamp out outbreaks of diphtheria, scarlet fever and other dangerous diseases, hundreds lost to the State each year from these causes might be saved.

Cholera has again made its appearance in this country. It has been arrested at the quarantine station of New York, but it yet remains to be seen whether the seeds which have been planted there will all be destroyed. Sanitary officials in this country are looking with anxious eyes to the possible developments a few months may bring.

It is probable that our greatest danger lies, not in these arrested cases, from which the appliances of modern sanitation may fully protect us, but in the possible presence of the germs of the disease among the clothes and effects of the immigrants who are *not* ill, and who, consequently, passing our quarantine boundaries may introduce the disease into the interior.

Quarantine, as a defense against cholera, has been abandoned by some of the highest sanitary authorities, and even its advocates must admit that it has often proved an ineffectual barrier. Undoubtedly our greatest safety will be found in measures to secure in all parts of the State, pure water, pure soil, and a pure atmosphere.

It is earnestly recommended that a Contingent Epidemic Fund be placed at the disposal of the Board, to be used, subject to approval by the Governor, in preventing the entrance, or in limiting the spread of this and other pestilential diseases in our State.

The distribution of circulars relating to the prevention and restriction of contagious diseases has been continued throughout the year. For the benefit of the German population, these were all translated into the German language. A letter was addressed to the mayors of cities and towns in Ohio, informing them that these circulars could be had in any number for distribution among their citizens. A large number were thus placed where their judicious distribution was guaranteed.

A circular letter was also addressed to the superintendents of public schools, asking their co-operation in placing these circulars in the homes of their pupils. The letter met with a hearty response, and many thousands of the circulars were distributed in this way.

Preceding the hot weather, a circular on the Care and Management of Infants and Young Children was prepared, and five thousand copies printed. This circular was extensively published in the newspapers and has been freely distributed. We may reasonably hope that these instructions were the means of saving many infant lives during the exceedingly hot term lately experienced.

The attention of a Board of Health is naturally directed toward learning to what extent preventable diseases prevail, the causes which underlie them, and to the instruction of the people as to the best means for their prevention. This work the Board has commenced, and material is being collected from many sources, which will be of great use hereafter in determining the causes, and in pointing out the methods for the prevention of disease.

A sanitary survey of our State indicates that in many districts the first principles of sanitation are yet to be taught.

The reports of deaths in Ohio show that a large number each year are due to what may be strictly classed as preventable diseases; but this represents but a small proportion of the cases of sickness due to these causes.

The value of human life and the cost of sickness are often figured to show the loss to a State in money value, due to preventable causes; but who can estimate the loss of *one* life to the family in which it occurs; and what higher duty can Government have, aside from the financial problem, than that of protecting the lives and health of her citizens. But laws which represent the the needs, and not the wants of a people, have been found weak weapons in sanitary warfare. A glance at the health laws of Ohio shows that many wise provisions have been made in the interests of better sanitation. The fact that so many of these are dead letters, proves that their enforcement cannot be intrusted to the hands of the people, who are yet uneducated as to the benefits which are to be derived therefrom. Hence, while the first duty of this Board must be, in a large measure, educational, to bring to the minds of all the people the immense gains in health and happiness to be had by the due observance of known sanitary laws, it should also be intrusted with the enforcement of such statutory laws as will compel the unwilling to respect the rights of their neighbors.

Wise legislation, properly executed, may be made the means of teaching the people to understand and observe those higher laws of nature upon which perfect health depends.

We would earnestly repeat all that was said in our last report in regard to the compulsory formation of local boards of health. A circular letter sent to all towns and cities in the State, elicited the fact that the majority of these have not taken advantage of the law which provides that they may create such boards It is only through such local organizations that the State Board of Health can ever secure that prompt action for the suppression of dangerous diseases, and abatement of injurious nuisances, that the public health demands.

Each week brings us reports of outbreaks of dangerous contagious diseases in some part of the State. All that can be done in most instances, is to send a supply of circulars relating to the disease reported. A competent health officer on the spot, would see that the rules of this board for restricting contagious diseases were promptly carried out.

By the circular letter addressed to mayors, the fact was also shown that in one year the total amount of public funds expended for sanitary purposes in two hundred and ten villages, amounted to less than sixteen hundred dollars.

The population of these places in 1880 numbered about 344,000. Undoubtedly the number would be much greater now. From this it will be seen that an average of less than five cents was spent to each inhabitant for sanitary purposes during the year.

While man, in a state of nature, may find free the conditions for vigorous health, when congregated in cities these conditions must be artificially created, and no community can long remain healthy where costs are not incurred for sanitary work; and while each householder finds a certain duty to do in this direction (and the amount so spent cannot be represented) still, a certain large portion of sanitary work must be done by the general public, or the work of the individual will come to naught.

It might well be a pertinent question for a man to ask authorities when seeking a home, How much is spent in your city for sanitary purposes?

A bill was introduced in the last Legislature providing that unpurified waste from straw-board works and paper mills should not be emptied into the streams of Ohio. The bill passed the House, but unfortunately was defeated in the Senate.

The pollution of our streams and rivers is a serious and rapidly increasing evil. As the population of cities increases, the pollution of wells and the danger attending the use of such waters become correspondingly greater.

Public water-works must be built, and it is becoming more and more difficult to find streams and rivers which will furnish a supply of the requisite purity.

Nothing is of greater importance to the health of the people than the purity of their water supply. Massachusetts, recognizing the importance of this fact, has lately (1886) passed an " Act to protect the purity of inland waters," and has given to their State Board of Health the duty of carrying out the provisions of the act.

Believing that popular instruction in sanitation offers the best means for securing obedience to sanitary rules and regulations, the first of a series of contemplated conventions was held at Warren, O., the latter part of March.

The convention was a complete success, and a number of papers were presented of exceptional value. With a view of bringing such instructive papers speedily before the public, many of these were included in the First Annual Report of the Board, which was not yet in press.

The Board has held four regular meetings and one special meeting during the year. An abstract of the proceedings will be found on a subsequent page.

A large number of letters from health officers, physicians and others have been received and answered during the year.

Special reports regarding the outbreaks of contagious diseases or concerning the sanitary condition of special localities, have been cheerfully furnished by physicians at our request.

For want of space, but a small part of the information so collected has been published.

Under Health of Towns will be found answers received from physicians from over one hundred cities and towns in regard to the healthfulness of these places during the year.

The second part of the report consists of papers of an instructive character, furnished by members of the Board and others.

Dr. E. R. Eggleston, of Mt. Vernon, Ohio, has furnished a series of charts, being map studies of the relation of meteorological conditions to prevailing diseases, collected at this office by weekly reports. This paper forms a valuable beginning to the study of a subject of much importance.

Dr. Byron Stanton, health officer of Cincinnati, has contributed a report on the Vital Statistics of Cincinnati for 1887.

Of the members of the Board, Dr. T. Clarke Miller, the retiring President, has given, in his Annual Address, a summary of the work of the Board since its organization, and has pointed out the more vital defects in the law of its constitution.

The President, Dr. John D. Jones, chairman of the committee on Hygiene of Occupations and Railway Sanitation, has contributed a report on the Effect of Occupations on the Health of Individuals The different occupations in which evils from lead poisoning arise, and the dangers peculiar to other occupations, have been pointed out. The different appliances and personal precautions by which these dangers may be minimized have also been fully considered.

The effect of laborious employment upon women is deserving of careful consideration; especially is this true in regard to young girls just entering the period of puberty. Their employment at hard work for long-continued hours at this time cannot but be injurious to their future welfare. The present law in regard to seats for female employes is defective, in that it provides that the use of such seats shall be permitted "when they are not necessarily engaged in the active duties for which they are employed." In the great majority of cases this would mean only outside of working hours.

Dr. S. P. Wise, chairman of the committee on Epidemic and Endemic Diseases and Quarantine, has furnished a most valuable paper on the subject of Cholera. The probabilities of cholera prevailing in our country soon were never greater, and the exhaustive report of Dr. Wise will be of great interest and practical use at this time.

A report on the Adulteration of Food, Drinks and Drugs has been furnished by Dr. D. H. Beckwith, chairman of the committee on that subject. The extent of this nefarious practice and the injurious consequences arising therefrom are clearly shown, while the remedy, "That every package exposed for sale shall bear the formula of its contents," deserves careful consideration.

Dr. Thos. C. Hoover, chairman of the committee on Special Sources of Danger to Life and Health, has contributed a report on this subject. The frequent occurrence of railroad accidents, due to carelessness of employes, and the fact that such men are often simply discharged from one company, to find employment in another, is forcibly stated. The valuable suggestion is made that some plan be adopted by which railroad companies in the State would be promptly notified of such discharge, and that these companies would undoubtedly, from self-preservation, refuse to employ such men.

If railroad employes knew that such a record of their carelessness would be made and published, there can be no doubt that accidents from this cause would be of less frequent occurrence.

The work of the Board is becoming known and appreciated throughout the State. A greater interest in sanitary matters has been developed in many localities, and the end of the year is reached with feelings of hope and encouragement for the future.

ABSTRACT OF THE PROCEEDINGS

OF THE

REGULAR MEETING OF THE BOARD DURING THE YEAR ENDING OCTOBER 31, 1887.

PROCEEDINGS OF JANUARY MEETING.

COLUMBUS, OHIO, *January* 18, 1887.

The Board convened at 7:45 P. M., Dr. Cretcher, President, in the chair. Present; Dr. W. H. Cretcher, Dr. T. Clarke Miller, Dr. Jno. D. Jones, Dr. S. P. Wise, Dr. D. H. Beckwith, Dr. T. C. Hoover, Dr. H. J. Sharp and Hon. J. A. Kohler.

Dr. C. Lyman, Dr. E. Sinnett and Dr. L. S. Holcomb, members of the General Assembly, were present as visitors.

The minutes of the last meeting were read and approved.

On motion of Dr. Hoover, the Board proceeded to elect officers for the ensuing year.

On motion of Dr. Sharp, Dr. T. Clarke Miller, of Massillon, was elected President by acclamation. Dr. Miller expressed his thanks for the honor conferred, and assumed the chair.

The Secretary presented his report of the office work for the past quarter.

A communication was presented from Hon. J. J. Hopkins, of Larue, Ohio, in regard to legislative measures for the prevention of the pollution of streams by straw-board works and paper mills. The communication was referred to the committee on Legislation.

On motion, the Secretary was instructed to have printed in German 5,000 copies of each of the circulars on diphtheria, scarlet fever, typhoid fever and small pox.

Dr. Sharp reported the sickness of five members of a family which was suspected to have been caused by impure drinking-water. He secured a sample of the water, which was examined and found to be a very suspicious water.

A PLAN FOR THE ORGANIZATION OF SANITARY CONVENTIONS.

SECOND SESSION.

January 19, 1887—9:30 A. M.

Dr. Miller presented a report from the committee appointed to select a plan for the organization of Sanitary Conventions. The following is the plan, as amended and adopted:

(1) The State shall be divided into seven sanitary districts, with reference to having one or several points in each district easily accessible by rail.

(2) A member shall be assigned to each district, to represent the Board in the organization of Sanitary Conventions, acting with the Secretary in this and other matters of importance.

(3) Under circumstances of sufficient importance, the Secretary and resident member may call in the Chairman of any committee, or the entire Board.

(4) The resident member shall act with a local committee in making arrangements for a Convention, and with the Secretary in securing the preparation of papers, selecting subjects for discussion, and arranging the program.

(5) The Secretary of the Board shall act as Secretary of the Sanitary Convention, such assistants as may be necessary being chosen by the Convention.

(6) The resident member shall preside until the Convention has selected its presiding officer.

(7) The Secretary, President of the Convention, and resident member shall act as a committee to select such papers or parts of papers as may be suitable for publication.

(8) The Secretary shall edit the proceedings of the Convention and secure their publication.

(9) Each participant in the work of the Convention shall be entitled to a copy of the proceedings, and they shall be otherwise circulated as the Board may direct

(10) Suitable papers read at the Convention may be embodied in the Annual Report, but no paper shall be printed with the proceedings which has appeared elsewhere in print.

(11) If deemed advisable, the Board may at any time call a State Convention.

(12) The Secretary of the Board shall be Secretary of the State Convention, with such assistants as may be required.

(13) The President of the State Board of Health shall be the temporary President of the State Sanitary Convention.

(14) The first step preparatory to a district Convention, should be for the Secretary of the Board or the resident member to visit the place and form a committee of arrangements.

(15) District Sanitary Conventions would probably be more profitable in cities of moderate size.

Dr. Miller, chairman of the Committee on Heating, Ventilation, Lighting and Hygiene of Schools, submitted a list of questions on the methods in use in Ohio for ventilating, heating and lighting school-houses, to be addressed to superintendents of schools. The Secretary was instructed to have the list printed and distributed.

AFTERNOON SESSION—2 P. M.

The President announced the standing committees for the ensuing year.

Dr. Miller offered the following resolution, which was unanimously adopted:

Resolved, That in view of the probable danger of the advent of cholera during the present year, we would respectfully suggest that the Legislature, in addition to its appropriation for the ordinary expenses of this Board, take into consideration the propriety of making a contingent appropriation to be known as a Contingent Epidemic Fund, to be placed at the disposal of the Governor for the use of the State Board of Health, to prevent the introduction or spread of cholera or other communicable disease, dangerous to the public health.

Dr. Wise spoke at some length on the subject of vaccination and vaccine virus.

On motion, a committee of three was appointed to report at a subsequent meeting of the Board, on the subject of vaccination and the procural of reliable vaccine virus.

The President appointed Drs. Wise, Sharp and Beckwith members of this committee.

EVENING SESSION—7 P. M.

Dr. Jones presented the following resolution, which on motion, was adopted:

Resolved, That the Ohio State Board of Health deems it necessary that each and every railroad train used in traffic within the State of Ohio, shall be supplied with a stretcher and emergency case, contents of the case to be arranged by the surgeons of the railroad companies, to be used in event of sickness or injury, until the services of a physician can be secured; also, that the employes of said railroad companies be instructed in the action to be taken in case of accidents, and that a copy of this resolution be furnished by the Secretary to the managers of all railroads in Ohio.

Dr. Hoover presented a report from the Committee on Legislation.

On motion, the report was accepted, and the recommendations contained therein adopted.

The Legislative Committee was instructed to have offered a joint resolution to secure blank room for an office for the Board.

PROCEEDINGS OF APRIL MEETING.

COLUMBUS, *April* 20, 1887.

The Board met in its new office at the capitol, Wednesday, April 20th, and was called to order by the President, Dr. Miller, at 7:30 P.M.

Present during the meeting Drs. Miller, Jones, Wise, Hoover Beckwith and Sharp, Dr. Cretcher being detained at home by the death of a relative.

The minutes of the last meeting were read and approved.

The Secretary presented his report for the preceding quarter, which, on motion, was approved.

Dr. Hoover, of the Finance Committee, presented a detailed report of the expenditures of the Board to date, including the cost of fitting up and furnishing the office.

On motion, the report was accepted.

The Secretary presented a report compiled, from reports of correspondents—of prevailing diseases during the months of January, February and March, 1887.

Dr. Beckwith reported a case of supposed scarlet fever in a horse.

SECOND SESSION.

April 21—9 A.M.

The Board reconvened at 9 A. M.

The following resolution by Dr. Jones was adopted:

WHEREAS, complaints have been made to the State Board of Health that many lives are endangered on account of old and imperfect boilers; be it

Resolved, That the State Board of Health recommends that an inspection be made of all boilers in Ohio, and that a copy of this resolution be forwarded to the State Inspector of Workshops and Factories.

The President, by request, made a verbal report of the Sanitary Convention at Warren, O., pointing out the good and bad features of the plan adopted for organizing such conventions.

On motion of Dr. Jones, the Secretary was instructed to prepare a circular on the care of infants during the hot months.

AFTERNOON SESSION—2:45 P. M.

The advisability of appointing a Chemist of the board was taken up for consideration.

On motion, Professor C. C. Howard, of Columbus, Ohio, was appointed to this position.

Dr. Beckwith presented a communication from the Dairy and Food Commissioner, in which it was stated instructions would be given to the chemists of the Commission to examine specimens of food presented by the State Board of Health.

On motion, the President and Secretary were constituted a committee to select papers from those presented at the Warren Sanitary Convention for publication in the First Annual Report.

Drs. Hoover and Wise were authorized to make such arrangements as they might deem advisable for holding a Sanitary Convention.

PROCEEDINGS OF JUNE MEETING.

TOLEDO, OHIO, *June* 15–16, 1887.

The June meeting of the Board was held at the Boody House in Toledo, O., June 15th and 16th, 1887.

The Board convened at 7:30 P. M., Dr. Miller presiding.

Present: Drs. Miller, Jones, Wise, Beckwith, Hoover, Sharp and Cretcher.

The minutes of the last meeting were read and approved.

The Secretary presented his quarterly report, containing an account of an investigation of an outbreak of small-pox at Farmersville, Ohio.

Dr. Miller and Dr. Beckwith reported verbally concerning a nuisance at Twinsburgh, O. Hon. C. M. Lyman, M. D., and Dr. N. S. Everhard, of Wadsworth, O., were present during this session, and asked the Board for instructions for restraining a butcher at Wadsworth from making sausage of tainted meat; also, to prevent him keeping meat in a foul ice-box.

Dr. Miller stated that he had received fifty-eight answers to the questions sent to superintendents of schools in regard to the heating, ventilating and lighting of school-houses, and promised a full report at a subsequent meeting.

Dr. Beckwith stated that he had secured samples of poisoned candy, which he was having analyzed; also, he was investigating the adulteration of lard.

MORNING SESSION.

June 16, 1887.

The Board met at 8 A. M., all the members present.

Dr. Wise, chairman of the committee on Vaccination, etc., made a preliminary report. Dr. Wise moved that the Secretary be instructed to confer with the Secretary of State, and request him to have the question, "Are you vaccinated?" placed on assessor's blanks.

An animated discussion followed as to the best means for collecting vital statistics.

Dr. Beckwith offered as an amendment to Dr. Wise's motion, that the President, Dr Hoover, and the Secretary be appointed a committee to confer with the Secretary of State in regard to revising the questions and instructions used by assessors in the collection of vital statistics. This motion was adopted.

A communication was presented from the health officer of Mt. Gilead, relating to a nuisance resulting from improper disposal of sewage from the court-house and public schools of that place.

A communication was presented from Franklin, O., in regard to death of cattle there, supposed to have been caused by drinking water polluted by the refuse of a paper-mill.

Announcements were read of the meeting of the National Conference of

State Boards of Health at Washington, D.C., in September, and of the American Public Health Association at Memphis, Tenn., in November.

On motion, the President and Secretary were appointed as delegates of the Board to attend these meetings.

AFTERNOON SESSION—2 P. M.

The circular prepared by the Secretary on the "Care and Management of Infants and Young Children," was taken up for consideration. On motion, the circular was adopted.

A communication was presented from the President of the Lake Shore and Michigan Southern Railway Company, relative to the Chicago stock yards. The communication was referred to the Ohio Live Stock Commission.

The Board proceeded to the election of President.

On motion, the Secretary was instructed to cast a ballot for Dr. John D. Jones, of Cincinnati, as President for the ensuing year

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PROCEEDINGS OF SEPTEMBER MEETING.

COLUMBUS, *September* 21–22, 1887.

The Board was called to order at 7:30 P.M., Dr. Miller presiding. Present: Drs. Miller, Jones, Wise, Beckwith, Hoover, Sharp and Cretcher.

The minutes of the last meeting were read and approved.

The Secretary presented his quarterly report, with an abstract of the proceedings of the National Conference of State Boards of Health, held in Washington, D. C., September 7 and 8, 1887, and stated that he had accepted the proceedings of the Conference for publication in the next Annual Report of the Board.

Communications from Upper Sandusky and Lynchburgh, in regard to the pollution of streams at those points, were read.

The following report of an investigation of an alleged case of glanders in a man at Dunkirk, O., was presented:

A CASE OF SUSPECTED GLANDERS IN MAN.

In August a letter was received from the mayor of Dunkirk, O., informing the Board that a citizen of that place was affected with what was supposed to be glanders, requesting that an investigation of the case be made, and wishing to know if it would be necessary to quarantine the patient.

This letter having been by mistake received and retained by the Board of Health of Columbus, did not reach this office until several weeks after it had been written.

In the mean time the Live Stock Commission, having received notice of the case, visited Dunkirk, examined the patient, and, as we learned, pronounced it a case of glanders.

On August 31, 1887, we visited Dunkirk, examined the patient and gained the following history:

In June, 1886, Mr. E. B. Leslie secured from a horse trader named Lance, of Lima, O., a horse which seemed in good health, except he was suffering from what was pronounced distemper. This manifested itself by a discharge from the nose, puriform in character, and continuous. The submaxillary glands were swollen, and small ulcers appeared at different times on the legs and flanks. The horse was sold to a man, and died a few months afterwards. According to Leslie, the horse had been constantly stabled and driven with other horses during the time he owned him, and had not, to his knowledge, communicated the disease.

In the latter part of June, Leslie drove this horse to Wauseon. Just before reaching his destination, something stung him in the right eye, causing him great pain, and to rub his eye roughly with his hand. Reaching Wauseon, the eye was greatly inflamed, very painful, and something looking like a crushed insect was removed from it. The eye continued to inflame, a large swelling developing, extending on to the nose and down upon the cheek. This gradually subsided, leaving a hard, defined swelling just below the inner canthus of the eye. About two weeks and a half after this injury he was accidentally struck on this swelling. A discharge of matter immediately flowed from the nose, the swelling almost disappearing. After this, by pressure over the swelling, pus would come from the nose. A few days after his last accident he opened the swelling on his face, matter escaping, and the discharge from the nose ceasing. This continued to discharge from the opening made for about two months.

About the time it healed a small lump appeared, about an inch and a quarter above the root of the nose. This was opened, matter escaping, and it continued opened for about two months, when it completely healed. About this time his nose became affected, a small lump appearing in the right nostril, on the inner side. White ulcerative patches formed on this, extending to the cartilage of the nose, with final perforation of the cartilage His general health failed considerably, with loss of weight and strength. He had cough, with expectoration, lasting, however, but a few weeks.

His present condition, August 31, is as follows:

Man somewhat emaciated but with tolerably good color. Appetite and digestion good. Sleeps well. No cough, is gaining steadily in flesh and strength. A small scar under the right eye, where first abcess appeared

Nose, whole organ swollen and congested, right nostril partly closed. An opening through the cartilage of the nose about a quarter of an inch in diameter. Edges of this aperture smooth but irregular. Mucus membrane of nose congested and greatly thickened.

The ulcerative process, which still continued, extended to the upper lip, which was thickened and congested.

There was a slight puriform discharge without perceptible odor. The bony structures were apparently not affected.

Fauces, tonsils and pharynx slightly congested. Voice clear; lungs normal; skin free from eruption.

History.—Age 41, blonde, medium height, present weight 135 pounds, usual weight 150. Married, with two children; youngest six weeks old; both healthy.

Mother and two sisters have suffered with nasal catarrh for a great many years. One brother troubled with a chronic erupitve skin affection, and another brother is scrofulous.

The patient is also scrofulous, presenting a scar on his neck produced by scrofulous ulceration. Six years before his present trouble he had given up out-door employment, which he had always followed, and gone into a restaurant. Two years later commenced to fail in health, and has had ill health ever since.

The history and physical examination led us to think the case was not one of glanders.

To determine this point it was decided to practice inocculation of a horse and some rabbits, and Prof. H. J. Detmers, of the Ohio State University, was engaged for that purpose. Before our arrangements could be completed the man left Dunkirk, where life had been made a burden to him on account of his affliction with a supposed contagious disease, and went to some western State.

Bearing on the diagnosis, we have been informed by a member of the Live Stock Commission that innoculation had been practiced in this case, under their direction, with negative results.

SECOND SESSION.

THURSDAY—9 A. M.

The recommendation of the Secretary that each member of the Board should secure at least two correspondents in each county of his district, was taken up for consideration.

Dr. Wise suggested that it might be well to have correspondents report diseases by numbers instead of by name.

Dr. Beckwith offered the following resolution, which was adopted:

Resolved, That each member shall report in writing at our next meeting his methods of securing correspondents in his district, and that the Secretary shall forward to each member a list of the correspondents in his district.

The advisability of publishing a Monthly Bulletin was discussed, and the following resolution offered by Dr. Sharp, adopted:

Resolved, That the Secretary and Dr. Miller be requested to report to the Board at its next meeting the feasibility, together with the plan and expense of the publication of a Monthly Bulletin

Dr. Sharp spoke of the pollution of streams and the impurity of wells occasioned by excessive drought. He suggested the plan of sending a circular of questions to cities and towns in Ohio, with a view of learning the system of sewerage and source of water supply in each.

On motion, Dr. Sharp and the Secretary were appointed as a committee to prepare a list of questions for this purpose.

The subject of evils arising from badly constructed water-works was discussed by Drs. Miller, Cretcher and Sharp.

Dr. Wise thought it advisable for the Board to endeavor to secure observations for ozone.

The Secretary presented forms used by assessors in several counties in Ohio for the collection of vital statistics. Also a draft of a bill prepared by Judge Clayton, Probate Judge of Wyandot county, O., for the improvement of the laws in force for such collections.

The Secretary presented a series of charts prepared by Dr. Eggleston, of Mt. Vernon, O., showing the relation of prevailing diseases to meteorological conditions. The Secretary was instructed to have engravings made of the charts to be used in the Annual Report of the Board.

On motion, the Board adjourned to meet in special session in Columbus on Wednesday, November 16, 1887, at 7 P.M.

C. O. PROBST, *M.D.*,
Secretary.

WORK OF THE OFFICE OF THE BOARD.

The work of the Board, as transacted at the Secretary's office, may be conveniently considered under the heads, The Collection and Dissemination of Information tending to promote the Public Health. Matter that cannot be so classified will receive a separate consideration.

THE COLLECTION OF INFORMATION.

Reports of prevailing diseases have been received from regular correspondents each week during the year.

The entire number of reports received from October 31, 1886, to October 31, 1887, was 3,797, being an average of 73 each week.

This work depends entirely upon the voluntary contributions of physicians, and while these reports represent but a comparatively small part of the State, they offer at present the only means by which the sickness in the State can be estimated.

We trust the medical profession, recognizing the importance of such collections, will enter more generally into this work, and enable us to present, each year, accurate reports of the prevailing diseases of our State.

Endeavoring to trace the origin of contagious diseases, and to estimate the influence of insanitary surroundings in favoring their spread or production, the following lists of questions were prepared and sent to each correspondent on the report of cases of scarlet fever, diphtheria or typhoid fever:

Office of the Secretary of the State Board of Health,
Columbus, Ohio.

Dear Doctor: I find that you have reported for the week ending..............................
....cases of diphtheria.
....cases of scarlet fever.
....cases of typhoid fever.

We desire to collect all the facts possible relating to outbreaks of dangerous communicable diseases, and you will confer a great favor on the Board by answering the questions on the inclosed blanks.

We send you a blank for *each case* reported, and you will please number them—1, 2. 3, etc., in your answers.

At the end of the year it is expected such reports will enable us to collate valuable data concerning the origin, mode of communication, etc., of congious diseases. These will be used in our annual report, where due credit will be given to all who have aided in their collection.

Please inform me if the circular issued by the Board regarding the restriction and prevention of this disease would be of use, and to whom we could send copies for distribution.

Yours, very respectfully,
C. O. PROBST, *M.D.*,
Secretary.

DIPHTHERIA.

1. Where does the patient reside?
2. Are there other cases of diphtheria in the same house? How many?
3. Are there other cases in the neighborhood? About how many?
4. Has a case of diphtheria ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the exposure of this case to other cases of diphtheria, or bearing on its origin.
6. What is the sanitary condition of the house and surroundings?
7. What measures were used to prevent the spread of the disease? (Isolation, disinfection, quarantine of members of the family, private funerals in case of death, etc.)
8. What success in restricting the disease attended these measures?
9. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

SCARLET FEVER.

1. Where does the patient reside?
2. Are there other cases of this disease in the same house? How many?
3. Are there other cases in the neighborhood? About how many?
4. Has a case of scarlet fever ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the exposure of this person to other cases of scarlet fever, or bearing on its origin.
6. What measures were used to prevent the spread of the disease? (Isolation, disinfection, quarantine of members of the family, private funeral in case of death, etc.)
7. What success in restricting the disease attended these measures?
8. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

TYPHOID FEVER.

1. Where does the patient reside?

2. Are there other cases of this disease in the same house? How many?

3 Are there other cases in the neighborhood? About how many?

4. Has a case of typhoid fever ever occurred in the house in which the patient resides, and if so, how long since?

5. Whence is the drinking water, used by the patient, obtained?

6. Is this water liable to contamination from any privy-vault, cess-pool, or other source?

7. Were the stools of the patient disinfected, and how?

8. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

By this means a large mass of matter is being collected, bearing on the origin and manner of communication of dangerous contagious and infectious diseases.

This will afford a basis for a report on the subject at a subsequent date.

In January a list of questions relating to methods used for heating, ventilating and lighting school-houses in Ohio, was prepared by Dr. T. Clarke Miller, Chairman of the Committee on this subject.

The questions were sent from the Secretary's office to the Superintendents of all public schools in Ohio.

In February the following circular letter was mailed to local boards of health, and health officers.

Office of the Secretary of the Ohio State Board of Health,
Columbus Ohio.

Dear Sir: It is the desire of the State Board of Health to collect from local boards of health and health officers monthly mortality reports of their respective towns and cities.

You will find blanks enclosed for this purpose, and you will confer a great favor on the Board by sending regular reports from your city. The object of the Board is to publish a collective monthly mortality report of the various towns and cities making such collections. Arrangements have been made with the Ohio Meteorological Bureau to furnish monthly reports of the meteorological condition of the State. These will be published in conjunction with the mortality reports, and a copy will be sent you each month. It is hoped pains will be taken to secure *accurate* and as complete returns as possible.

Please mail your report as soon after the close of the month as possible, that our report may be made up and printed early in the month.

Please state in your first report the estimated population of your town or city.

Respectfully yours,

C. O. Probst, *M.D.*, *Secretary.*

A postal blank was enclosed for returning the information requested. The following is a copy of the blanks used:

.... *Ohio,*
.... 188—.

MONTHLY REPORT OF DEATHS TO THE OHIO STATE BOARD OF HEALTH.

CAUSES OF DEATH.

Cause	No.
1. ZYMOTICS.	No.
Croup	....
Cholera morbus	....
Cholera infantum	....
Cerebro-spinal meningitis	....
Diarrhœa	....
Dysentery	....
Diphtheria	....
Erysipelas	....
Malarial fever	....
Measles	....
Puerperal fever	....
Pyaemia and Septicaemia	....
Scarlet fever	....
Small-pox	....
Syphilis	....
Tonsillitis	....
Typhoid fever	....
Whooping cough	....
Other zymotic diseases	....
Total number zymotic diseases	....
2. CONSTITUTIONAL.	
Cancer	....
Rheumatism	....
Phthisis pulmonalis	....
Other constitutional diseases	....
Total number of constitutional dis.	....
3. LOCAL.	
Apoplexia	....
Bright's disease	....
Bronchitis	....
LOCAL—*Continued.*	No.
Convulsions	....
Enteritis	....
Gastritis and Peritonitis	....
Heart disease	....
Meningitis	....
Pleurisy	....
Pneumonia	....
Other local diseases	....
Total number local diseases	....
4. DEVELOPMENTAL.	
Inanition	....
Old age	....
Premature birth	....
Still-birth	....
Other developmental diseases	....
Total number of develop diseases	....
5. VIOLENCE.	
Total number	....
Total deaths, all causes	....
AGE.	
Total deaths under one year.	....
Total deaths over one and under five years	....

Signature ....

The following circular letter was addressed to the mayor of each town having over five hundred inhabitants, with the exception of those cities and towns known to have boards of health. A postal blank, with questions to be answered, was enclosed.

OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH,
COLUMBUS, OHIO.

To the Mayor:

DEAR SIR: The State Board of Health desires to learn what cities and towns in Ohio are now provided with boards of health. You will render an important service to the Board by answering the questions on the enclosed postal card, and mailing it at your earliest convenience. We send you copies of circulars issued by the Board on the restriction and prevention of dangerous contagious diseases. These have been printed in English and in German, and if desired for distribution among your citizens, we will take pleasure in sending you any number you may require. In filling out the postal please give name of city, date, and signature.

Respectfully,

C. O. PORBST, *M.D., Secretary.*

QUESTIONS.

1. Have you a board of health in your city?..
2. Is it an active organization?..
3. What is your health officer's name?...
4. Is a record of births, marriages and deaths made?..
5. About what sum was spent in your city during the past year for sanitary work?...
6. Would it be wise, in your opinion, to provide by statute that every city, town and village in the State *shall* create and maintain a board of health?.......................

....Town.

.... 1887.

....Mayor.

Two hundred and ten answers were received. Of this number ninety-three reported boards of health, sixty six of which were said to be active organizations. In only twenty of the two hundred and ten towns were collections of vital statistics made.

In answer to the question: "Would it be wise, in your opinion, to provide by statute that every city, town and village, in the State *shall* create and maintain a Board of Health?" all but ten answers were decidedly affirmative.

Information respecting the meteorology of our State has been received through the Ohio Meteorological Bureau, and the United States signal stations located in Ohio.

Through the courtesy of the former, arrangements have been made by which observations for ozone will be made and furnished us by the regular observers of the Bureau.

In addition to the matters indicated, information has been received by correspondence and otherwise, respecting the outbreaks of dangerous infectious diseases, the sanitary condition of particular localities, the existence of public nuisances, and various subjects of a kindred nature.

Through reports, bulletins, circulars, etc., received from other State Boards of Health and city boards of health, information has been had as to sanitary movements and the prevailing diseases in other States.

As an appendix to this report will be found the "Proceedings of the Conference of State Boards of Health," held at Washington, D. C., September, 1887. The following resolution, by which the various States have agreed to send prompt notification to neighboring States of outbreaks of dangerous contagious diseases, gives increased security to our State against epidemic diseases:

Resolved, That those communicable diseases hereinafter mentioned, prevalent in certain areas, or which tend to spread along certain lines of travel, be reported to all State and provincial boards within said area, or along said lines of communication. That in the instance of small-pox, cholera, yellow fever and typhus, reports be at once forwarded, either by mail or telegraph, as the urgency of the case may demand; and further, that in the instance of diphtheria, scarlatina, typhoid fever, anthrax or glanders, weekly reports, where possible, be supplied, in which shall be indicated, as far as known, the places implicated and the degree of prevalence.

THE DISSEMINATION OF INFORMATION.

The weekly health bulletin, based on reports from regular correspondents, which was commenced in August, 1886, has been continued during the year. Copies are sent to newspapers, medical and sanitary journals, in which it is published, and to the correspondents of the Board and others. The public, in this manner, is given notice of the location of all cases of scarlet fever, diphtheria and typhoid fever reported to the Board.

A monthly report of the mortality of cities, of which mention was made, is published each month and sent to local boards of health and health officers in Ohio, to correspondents of the Board, to State Boards of Health, to papers, and sanitary journals, and to the local boards of health in all the principal cities in the United States and Canada.

At the commencement of the year a circular on the restriction and prevention of small-pox was issued. Thirty thousand copies were printed, and nearly half of these have already been distributed.

SMALL-POX—ITS RESTRICTION AND PREVENTION.

ISSUED BY THE STATE BOARD OF HEALTH OF OHIO, 1886.

Unmodified small-pox is one of the most fatal and loathsome of diseases.

Before the introduction of vaccination, one-tenth of all the deaths that occurried in Europe were due to this disease alone.

At the present time, where vaccination, isolation and disinfection can be properly carried out, the disease is one of the most manageable with which health authorities have to deal.

VACCINATION IS OF THE FIRST IMPORTANCE.

Many believe that vaccination is of use only in causing one exposed to small-pox to have it in a mild form.

This is its least important action, for vaccination, recently and properly done, will prevent, almost without exception, the contraction of this disease, no matter how great the exposure.

This fact has been demonstrated time and again. Dr. Henry Tompkins, medical superintendent of the Fever hospital belonging to the Manchester Royal Infirmary at Monsall, in a paper read at Owens College, said, (speaking of vaccination): "The most striking of all evidence is, perhaps, that derived from the small-pox hospitals themselves. Here the protective influence of vaccination is seen and proved in a manner beyond all cavil. At Highgate, during an experience of forty years, no nurse or servant having been re-vaccinated, has ever contracted [the] disease, and evidence of the same character I can myself bring forward; for, during the whole time that I have had charge of the fever hospital, more than a thousand cases of small pox have passed under my care, yet no servant, nurse, porter or other person engaged there, has, after re-vaccination, ever taken it, though exposed daily to infection in its most concentrated form."

WHEN TO VACCINATE.

Every person who has not been vaccinated should at once consult his physician and have it done as soon as possible.

Do not wait for an epidemic of the disease, for you cannot tell when you may be exposed. See that your children are properly vaccinated

There are but few conditions which justify a postponement of this operation, and you can consult your physician in regard to this.

RE-VACCINATION.

It is a common impression that, as long as a scar remains of a former vaccination, the person is fully protected from small-pox. This is not always the case While one vaccinstion *may* protect for a life-time, it very often does not.

This fact can be ascertained in but one way, which is by *re-vaccination;* and it has been found that re-vaccination "takes" in a large number of cases The only safe plan is to be re-vaccinated every five or six years, and in the presence of an epidemic, to be again re-vaccinated, unless it has just been done.

WHO SHOULD VACCINATE.

Never allow any one but an experienced physician to vaccinate you; the operation is not the trifling one it is supposed by many to be.

It is of the utmost importance that the virus or matter used should be fresh and pure, that the arm or other part be properly prepared for its reception, and, above all, that the sore resulting be seen at the proper time by one who is able to judge if the vaccination has "taken," and if the person is thoroughly protected It is much better not to be vaccinated at all than to have it done ineffectually, for one is then gven a false sense of security, which may lead him into contact with the disease when it might have been avoided

For these reasons, a physician should always be employed, and no one should attempt to vaccinate himself or his family; exceptionally, where immediate vaccination is demanded, as where one has been exposed to small pox and the services of a physician cannot be procured, it may be necessary to have some one else do it.

The greater the number of perfect "marks" obtained, the greater seems to be the protection; hence it is well, when being vaccinated, to have it done in several different places; these may be near together, and will not increase the severity of the symptoms which follow vaccination.

THE RESTRICTION OF SMALL-POX.

Small-pox is one of the most contagious of diseases, and the poison may retain its infecting property for weeks and months. It is probably contagious from the time when the fever first appears until for some time after the eruption has entirely disappeared.

On the first appearance of the disease prompt and decided measures must be taken to prevent its spread.

The affected person should at once be isolated from all but the necessary attendants. If he is to be treated at home, a room, preferably in the upper story, and as far removed from the family as possible, should be selected for his occupancy. Remove everything from the room not absolutely needed for the patient or his attendants.

Carpets should be taken up, and feather beds should not be used, unless they are afterwards to be burned. Secure a large room and provide means for an abundance of fresh air.

Vaccinate at once all who may have been exposed to the disease, and all who are to act as nurses or attendants, even though they may have had small-pox, unless it has been recently.

Remember that vaccination produces its effect in a shorter time than it takes for the poison of small-pox to develop; hence, even though one has been exposed to the disease, he may escape, or at least will have it in a modified form if he is vaccinated soon after his exposure.

A sign with *small-pox* on it in large plain letters should be placed in a conspicuous position on the house or premises. The house should be quarantined, and no one be permitted to enter or leave it without permission from the health officer or attending physician. Those who are *known* to have been exposed to the disease should be prohibited from mingling with others for a period of two weeks, or until it is known they have not contracted the disease. An abundant supply of pure, fresh air should be secured for the patient, care being taken to prevent his exposure to direct drafts of air.

All discharges from the patient should either be received on old rags, *which are to be immediately burned*, or be received in vessels containing a quart of the following solution:

DISINFECTANT SOLUTION.

Sulphate of zinc, 4 oz.; common salt, 2 oz ; dissolve in one gallon of water. Allow the discharges to remain in this solution half an hour. All clothing, bedding, etc., soiled by the patient should be burned at once, or boiled in the disinfectant solution, before being carried from the room. Unless countermanded by the physician, it is well to keep the patient anointed with vaseline when the eruption commences to scale, to prevent these scales from being disseminated in the atmosphere. After death, recovery or removal of a small-pox patient, the room which he has occupied must be thoroughly fumigated.

To disinfect a room by fumigation, proceed as follows:

The contents of the room should be so arranged as to expose the greatest amount of surface to the action of the disinfectant. Heavy woolen clothing, stuffed bed covers and similar articles, should be hung up in the room and pockets turned inside out. Pillows, mattresses, upholstered furniture, etc , must be cut open and the contents spread out for fumigation. Carpets are best fumigated on the floor. After fumigation, these articles must all be hung in the open air and thoroughly beaten and shaken.

Close the apartment as completely as possible, stopping all openings through which the gas might escape. Thoroughly dampen the floor, walls and furniture.

For a room about 10 feet square, take three pounds of sulphur, broken into small fragments For larger rooms, use a proportionately larger amount of sulphur. Put it into an iron pan, and, to avoid danger from fire, support the pan on bricks, placed in a tub containing a few inches of water. Moisten the sulphur with alcohol and set on fire, being careful not to breathe the fumes of the burning sulphur. When certain the sulphur is burning well, leave the room, close the door, and allow the room to be tightly closed for several hours.

Open all the windows and air the room thoroughly for several hours. If the walls and ceiling are papered, remove the paper and burn it. The floor, walls, ceiling, wooden furniture, etc., should be thoroughly washed with the disinfectant solution.

The room should be thoroughly aired for several days, and should not be occupied for some time.

The body of one dead from small-pox should be wrapped in a sheet saturated with the disinfectant solution, made double strength, and be buried at once.

No public funeral should be held of a person dying from this disease, or at any house where it has existed, unless the house has been thoroughly disinfected.

A person recovering from this disease should remain isolated until the physician in charge or health officer declares he is no longer a source of contagion.

The clothes worn by the patient should be burned, if not too valuable, and if not burned, must be thoroughly disinfected before being worn again.

Following this, a circular letter was addressed to Editors, and sent to newspapers throughout the State:

THE OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, ———, 18—.

To the Editor:

DEAR SIR: Enclosed you will find copies of the circulars issued by the Ohio State Board of Health, for the Prevention and Restriction of Scarlet Fever, Diptheria, Small-pox and Typhoid Fever.

These dangerous and common diseases may be, to a large extent, prevented by the observance of the simple rules and instructions contained in these pamphlets.

From the liberality of the Press in all matters pertaining to the public good, we feel assured our endeavors to disseminate this important knowledge will meet with its hearty support.

We would be greatly indebted to you for the appearance of these circulars in your paper, or if this be impossible, for informing your readers that copies in English or German can be obtained free of charge by addressing

C. O. PROBST, M.D.,
Secretary State Board of Health, Columbus, Ohio.

The circulars or a notice of them was published in a number of papers, while hundreds of letters requesting copies of the circulars were received.

Copies were sent also to the mayors of cities and towns in Ohio, with a letter informing them that any number desired for distribution would be sent free of cost.

A number of cities requested and received copies, over fifteen thousand being distributed in this way.

The following circular letter, with copies of our circular on contagious diseases was sent to all superintendents of public schools in the State.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O., *October*, 1887.

To the Superintendent of Public Schools:

DEAR SIR: We send you enclosed copies of circulars issued by this Board, relating to the prevention and restriction of dangerous communicable diseases. As two of these diseases—Diphtheria and Scarlet Fever—are essentiallay confined to children, you could greatly aid us in our endeavor to disseminate instructions for their prevention by requesting teachers to send copies of these circulars to the homes of afflicted scholars We will be pleased to furnish you, on application, any number of copies you may desire for this purpose. We are receiving from some schools, monthly reports of the sickness occurring among the scholars. If such reports are made to you, we would be thankful for a copy each month.

We would respectfully direct your attention to Section 3986 of the Revised Statutes, which gives to School Boards the power to "make and enforce such rules and regulations to secure the vaccination of and to prevent the spread of small-pox among the pupils attending or eligible to attend the schools of the district, as in its opinion, the safety and interest of the public require"

It is certainly needless to present arguments to prove the protective power of vaccination, or the increased safety that would be given the public by the enforcement of a rule requiring children to present evidence of a satisfactory vaccination before admission to the public schools.

Will you kindly inform us if such a rule has been made by your board, and if it has not, we would earnestly request that you bring the matter before them for consideration at an early opportunity.

We enclose an addressed envelope, trusting you will favor us with a reply.

Respectfully, C. O Probst, *Secretary.*

Answers were received from a large number, expressing a hearty interest in our work, and asking for copies of the circulars to be placed in the homes of school children.

By these various methods plain, practical instructions for the prevention of dangerous contagious diseases have been placed in thousands of homes throughout the State. We may reasonably believe that the dissemination of this information has already lessened the number of deaths from preventable diseases.

At the January meeting of the Board, the following resolution was unanimously adopted, and a copy, accompanied by a circular letter, was sent to each manager of railroads operated in Ohio:

Ohio State Board of Health, Office of the Secretary,
Columbus, Ohio, *February*, 1887.

Dear Sir: By direction of the State Board of Health, I send you a copy of a resolution adopted by the Board at its last meeting, calling your attention to a subject demanding consideration in the interest of the traveling public.

There can be little doubt that much suffering is caused, and many lives sacrificed, from the want of proper appliances and prompt attention in cases of railroad accidents.

We beg you will give this matter your earliest attention.

I am, very respectfully,
C. O. Probst, M. D.,
By order of the Board. *Secretary.*

Resolved, That the Ohio State Board of Health deems it necessary that each and every railroad train used in traffic, within the State of Ohio, shall be supplied with a stretcher and emergency case—contents of the case to be arranged by the surgeons of the railroad companies—to be used in event of sickness or injury, until the services of a physician can be secured.

Also, that the employes of said railroad companies be instructed in the action to be taken in case of accidents; and that a copy of this resolution be furnished, by the Secretary, to the managers of all railroads in Ohio.

In June a circular relating to the Care and Management of Infants and Young Children was prepared, and five thousand copies were printed.

The continued high temperature during the following months of July and August caused a high mortality of the infant population throughout the State, and the circulars were in great demand.

Over four thousand copies were sent out, the majority to individuals requesting copies. It was gratifying to note that in most instances these requests for circulars were made by mothers, who would undoubtedly make good use of the information contained therein.

The circular published was as follows:

THE CARE AND MANAGEMENT OF INFANTS AND YOUNG CHILDREN.

ISSUED BY THE STATE BOARD OF HEALTH OF OHIO.

Thousands of children in Ohio die every year from improper care and bad surroundings. It is estimated that out of one hundred live-born children, from forty to fifty will die before the close of the fifth year. That a large proportion of these deaths could be prevented, is well established, and the State Board of Health has presented herewith, in simple form, instructions for the care and management of children, which, if followed, will be the means of saving each year many precious lives.

In seeking for the cause of this excessive infant mortality, we find that the acute infectious fevers, such as measles, diptheria, small-pox, scarlet fever, and whooping-cough; inflammations of the respiratory apparatus, as pneumonia, bronchitis, etc., and diarrhœal diseases, are the main factors in producing it.

Small-pox, scarlet fever, diphtheria, etc., are to be prevented by avoiding exposure to these diseases, or to clothing or other articles containing the poison by which they are caused.

It is to be especially urged that children be vaccinated at an early age, and thus be protected from that dread disease, small-pox.

Circulars on the restriction and prevention of these diseases have been issued by the Board, and will be sent to any one on application.

The other causes of death of children, viz., inflammation of the lungs and diarrhœal diseases, may be largely prevented by precautions in regard to exposure and diet. Great care is needed with little children, to provide them with proper

CLOTHING.

The first want of a new-born babe is *heat*. It is unable to supply sufficient heat to keep itself warm, even when heavily clothed; hence, unless constantly in bed with its mother during the first week or two of life, the rooms it inhabits must be constantly kept warm.

As the child grows older, and is placed, as it should always be, to sleep by itself, it will often by its restlessness, become uncovered at night. It should sleep in night dresses of flannel, preferably made as one garment and sewed up at the bottom, so the feet cannot become uncovered.

Clothing for children should always be made very *loose*, giving their limbs and lungs free movement. It is when children are old enough to walk and be out of doors, that the greatest care is demanded for protecting them by proper clothing. It is at this age that deaths so frequently occur from acute inflammatory affections of the lungs, and this is undoubtedly due to exposure and improper dress. Care must be taken to clothe the limbs and chest warmly. Mothers are often negligent in this respect, and children may frequently be seen in cold weather, clothed in heavy skirts and dresses, but with legs and necks comparatively bare.

It should be remembered that in most houses in winter, a cold stratum of air is to be found near the floor, and hence, infants placed on the floor may be greatly exposed to cold in a comparatively warm room.

CLEANLINESS.

Attention must be given to cleanliness, and children should not be allowed to sleep in soiled garments. Clothing worn at night should be shaken and thoroughly aired when removed in the morning. The clothing and napkins soiled by the discharges of young infants should be removed at once, and not used again until washed and thoroughly dried. The washing and airing should not be done in the nursery or living rooms

Unless children are very feeble they should have frequent baths, except when otherwise directed by a physician. If they are too delicate for a full bath, sponging should be substituted. The popular idea that dirty children are the healthiest, is certainly not true in regard to nursing infants.

The factor of greatest importance to the health of children is their

FOOD AND FEEDING.

Especially is this true of nurslings and children under two years of age. The only natural and best possible food for an infant is breast milk. If the mother has a sufficient supply and is in good health, or if a suitable wet-nurse can be secured, nothing but breast milk and pure water should be given the child for the first five or six months. The child is very frequently injured by *overfeeding.* A feverish child, craving water, is often given an inordinate supply of food, by nursing, to quench its thirst. Many things besides hunger cause children to cry and be restless; and as a rule, for the first two months they should not be nursed oftener than once in two hours, and older children not so often From the first, children should be nursed less frequently at night, and the mother must not sleep with her child at the breast.

After the first week or two the child should always sleep by itself. The mother should carefully guard her own health, using such diet as best agrees with her. She should not give the breast to the child when she is greatly fatigued or over-heated, or when suffering under great excitement from any cause. When the mother's milk is insufficient, or the child, for any reason, cannot be nursed, it will be necessary to resort to

ARTIFICIAL FOOD.

This is always an evil, and nothing but necessity should cause a mother to resort to it. The one factor of greatest importance in infant mortality is diarrhœal diseases, and these more frequently occur in children wholly brought up by hand. When breast milk cannot be had, cow's milk, properly prepared, offers the best substitute. Great care should be exercised to secure pure milk from healthy, well-fed cows. This is of importance, and should not be neglected.

The milk should be obtained as fresh as possible, and kept in a cool place in perfectly clean vessels. It would be better, perhaps, to immediately boil the milk, especially in hot weather, when liable to rapid decomposition. Never keep milk in damp, mouldy cellars, or in those containing decaying vegetable or other matter. Neither should it be kept in sleeping rooms, or those constantly inhabited. It should be remembered that nothing so readily collects and preserves filth of all kinds as milk. Cow's milk, to be fitted for food for young infants, must be diluted, from one-third to one-half, and slightly sweetened and salted.

For diluting the milk, barley-water is much better than pure water, acting both as a diluent and as food. It may be prepared by boiling a tablespoonful of ground barley in a pint of water for fifteen minutes, and carefully straining through a cloth. It is much better to buy the whole barley, which may be sufficiently ground in an ordinary coffee-mill. The proportion of barley water to be added will depend on the age of the child.

This food must be given at regular intervals, and to young infants should be administered blood warm, through a nursing bottle. A plain bottle of small size should be used. with a nipple, avoiding long rubber tubes, and bottle and nipple must be kept scrupulously clean.

Prepare enough milk for one meal, and if any remains after feeding, empty at once and thoroughly scald the bottle and nipple. If the child thrives and gains weight on this diet, nothing else should be given it for food for the first six or seven months. A less quantity of water, however, should be added to the milk as the child grows older. If there is a tendency to constipation, oatmeal gruel, made in the same way as the barley-water, only boiled for a longer time, may be used to dilute the milk. If this food does not agree with the child, something else must be substituted, and in such cases a physician should be consulted, and prescribe its diet. Do not trust to infant foods sold in the shops, without his advice.

Children from nine to ten months of age may be allowed a greater variety of food, but milk should still form an important part of their diet.

CARE IN HOT WEATHER.

Great care is required in the diet of children during the extreme hot months. It is of great importance at this time to keep children cool. The coolest room in the house should be assigned for their sleeping-room, and they should be given a bath before bed time. During the heat of the day they should be lightly clad, and it would be well also to give them a cool sponge bath. If a child is seized with diarrhœa, keep it quiet in a cool place, and look carefully to its diet, which it would be well to reduce for a short time. If it does not soon get better. send for a physician, and do not give the child medicine without his sanction.

Finally, whoever would raise healthy children must be doubly guarded as to the cleanliness of his house and surroundings. The little ones suffer first from unhealthy surroundings, and the house, from garret to cellar, should be clean and well aired. Have an eye to all sinks, water-closets, bath-tubs, etc., making sure, by repeated examinations, that the air of your dwelling is not being poisoned by escaping sewer gas.

Remove filth of all kinds from house, cellar, and yard; be sure your drinking water is pure, and not contaminated by leachings from any cess-pool or privy vault.

You should not only put your own house and premises in proper condition, but insist that your neighbor does likewise.

The arrival of immigrants in Cleveland, O., who had sailed from the port of Palermo, where cholera was known to prevail, and who had, it was reported, passed the quarantine station at New York, with but twenty-four hours detention, and without disinfection of their baggage, led to the preparation of the following pamphlet on

THE PREVENTION OF CHOLERA.

Cholera has again made its appearance in this country to the great danger of our citizens.

The State Board of Health publishes this circular to warn sanitary authorities of all cities, towns and villages in Ohio, and urge them to take immediate steps for its prevention. In the report on the prevention of epidemic cholera in America, adopted by the American Public Health Association, and the conference of State Boards of Health it was stated:

There are three essential factors to the prevalence of cholera in this country as an epidemic.

1. The importation of the disease by means of ships more or less directly from its place of origin in India.
2. Local unsanitary conditions favorable to the reception and development of the disease.
3. Persons sick with the disease in some of its stages, or things infected by such sick persons, to carry if from place to place.

These three factors are now here, and it will be a wise precaution for authorities to take timely action to prevent, if possible, the entrance of cholera to our State, and to be prepared for its coming should such measures fail.

The history of former invasions shows that it has sometimes been carried by immigrants past our quarantine stations to points far inland where the germs of the disease have been liberated by the unpacking of clothes or household goods. The epidemic in this country in 1873 furnishes an example of this kind, and Ohio was one of the States into which it was so introduced. Passengers arrived here in perfect health; some of them reached Carthage, Ohio, where their goods were unpacked. "Within twenty-four hours after the poisonous particles were liberated, the first cases of the disease appeared, and the unfortunates were almost literally swept from the face of the earth."

Such an example should teach us to be prepared to deal promptly with the disease, should it again visit our State, and to take such steps *now* as will tend to stay its ravages when it comes.

Newly arrived immigrants should be closely inspected. The place from whence they came, the port from which they sailed, the vessel which brought them and the date of their arrival, should be learned at once.

If any possible suspicion attaches to them, they should be isolated for a time and their clothes and baggage should be thoroughly disinfected.

It has already been demonstrated that our quarantine ports are not to be trusted.

Passengers arriving here directly from Palermo, where cholera is now prevailing, were permitted to pass the quarantine station at New York with but a few hours' detention Some of these passengers have already reached Cleveland, Ohio, where, fortunately, they were promptly cared for.

All health officers and health authorities should be constantly on the alert for suspected cases, and be prepared to deal promptly with them when found.

Cholera will not flourish in pure air, pure water, or an uncontaminated soil. Cleanliness is the watch-word of protection.

Should the disease gain access to our State, those cities and towns which have sinned most against cleanliness will be the greatest sufferers.

It is too late to remove cholera-breeding soil after the seeds are sown; barriers must be erected before the enemy appears.

It is important for the public very distinctly to remember, that pains taken and costs incurred for the prevention of cholera cannot, in any event, be regarded as wasted.

"The local conditions which would enable cholera, if imported, to spread its infection in this country, are conditions which, day by day, in the absence of cholera, create and spread other diseases, diseases which, as being never absent, are in the long run far more destructive than cholera; and the sanitary improvements which would justify a sense of security against any apprehended importation of cholera would, to their extent, though cholera should not come, give amply remunerative results in the prevention of those other diseases."

The preparation for cholera will greatly allay the terror and demoralization which its presence inspires, and while fear will not produce cholera, it greatly favors an attack by lessening the vital resistance which one in health and calmness of mind offers to the disease.

Cholera is not contagious like small-pox or scarlet fever. The germs of the disease are found in the discharges of the sick, and may be effectually destroyed by burning or disinfecting these discharges.

The first cases of the disease may be taken for cholera morbus, or diarrhœa, and its germs be scattered before they are rendered inoccuous.

The poison may be carried in various ways to any of our towns or villages, and be liberated without a note of warning

Such preparation should be made for its coming by the thorough and systematic removal of filth in all its forms, and the liberal use of disinfectants, that its germs, unable to find a breeding place, must die of starvation.

Filth, with moisture, are elements which keep alive the germs of cholera; remove these and the disease cannot become epidemic. Every city, town, and village should commence at once a rigid sanitary inspection.

All stagnant ponds and low, wet grounds should be thoroughly drained. Streets and alleys should be made clean, and all public sewers and drains flushed and disinfected. Slaughter houses and the buildings of offensive trades should be inspected, cleaned and disinfected.

All accumulations of filth of whatever kind should be removed far from all dwellings, or be thoroughly destroyed.

Householders should be warned to cleanse and purify dwellings and premiess. Water closets, sinks and drains should be flushed and disinfected, cellars cleaned and aired, and all filth about yards or stables removed or destroyed.

By these means epidemic cholera may be prevented in our State. On each city must rest the responsibility of inviting, by its uncleanliness, this dread scourge of mankind.

The object of this circular is to give timely warning to be watchful in preventing the entrance of cholera in our State, and to take such measures *now* as will restrict the disease, should it come.

On the appearance of cholera in Ohio, or in neighboring States, another circular will be issued at once, giving more specific directions for dealing with the disease.

Should a case appear in any part of the State, this Board should be notified *by telegraph at once,* when all possible aid will be given to local authorities.

C. O. Probst, M.D., *Secretary.*

This was sent to all local boards of health and health officers in the State, and to the mayors of all cities and towns not provided with such organizations. It was also sent to the press, and appeared in many papers.

While it is doubtless true that our best protection would be found in an efficient National quarantine service that would prevent the entrance of this disease into our country, we must, for the present, place our dependence on such *local* sanitary and quarantine measures as experience has shown will, in a great measure, insure us against an epidemic of cholera in our State.

HEALTH OF TOWNS IN OHIO DURING THE YEAR ENDING OCTOBER 31, 1887.

The following circular letter and list of questions were sent out November 1, 1887, a copy being mailed to a physician in each town in the State:

STATE BOARD OF HEALTH,
Office of the Secretary,
Columbus, Ohio, *October* 31, 1887.

Dear Doctor: The State Board of Health desires to collect information regarding the health of the State during the year ending October 31, 1887. In order to be able to make authoritative statements, we have sent the inclosed list of questions to physicians in all parts of the State. We would like to depend upon you for the desired information respecting your locality. Your reply, together with any additional remarks on the subject, will be published in connection with your name in our forthcoming report. If you are unable to comply with our request, will you kindly hand this letter and questions to one who will. A stamped envelope is herewith inclosed for return of answer. Any additional postage will be paid at this office.

Please return your answer at your earliest convenience.

Respectfully,
C. O. Probst, M. D., *Secretary*.

QUESTIONS.

1. Has an epidemic of any kind prevailed in your town or locality during the year ending October 31, 1887?
2. If so, state what, giving its extent and such special features as may be of interest?
3. Was the amount of sickness in your locality during the year indicated greater, less, or about the same as for previous years?
4. What diseases were *more* than usually present?
5. Do you attribute this unusual prevalence to any special causes; and, if so, are they in any way removable?
6. To what extent did typhoid fever occur in your locality during the year?
7. In what months did the greatest number of cases occur?
8. What were the general conditions that seemed to favor its development?
9. About how many cases of diphtheria occurred in your locality during the year?
10. What was the general character of the disease?
11. State any facts known regarding the origin or communication of this disease?
12. What, in general, was the sanitary condition of houses in which it occurred?
13. Did any cases offer conclusive proof of the contagiousness of diphtheria; and, if so, give full particulars?

14. To what extent did scarlet fever occur?

15. Were isolation and disinfection practiced in all cases of scarlet fever and diphtheria?

16. Were children from families in which these diseases were present permitted to attend school or other public places?

17. Were public funerals held in cases of death from these diseases?

18. Please state how far these measures, where practiced, were successful in limiting these diseases?

19. To what extent did measles occur?

20. In what month did it specially prevail?

21. Were any precautions taken to limit its spread?

Any further information relating to the health of your neighborhood, or to causes which apparently affected it, will be thankfully received.

Name..M. D.
Residence..
Date...

The following answers, arranged alphabetically by counties and towns, were received:

ADAMS COUNTY.

CHERRY FORK.

REPLIES BY R. R. HOPKINS, M. D.

1. No.
3. Much less.
4. None.
6. Four or five cases.
7. February and March.
9. Eight cases.
10. Very mild.
12. Damp.
13. None.
14. None.
15. Yes, those under my control.
16. No.
17. No deaths.
19. Epidemic.
20. February, March, April.
21. Yes.

The year 1887, up to October 31, at Cherry Fork, has been a remarkably healthy year. No epidemic excepting measles.

DUNKINSVILLE.

REPLIES BY DANIEL ELLISON, M. D.

1. Yes.
2. Measles; general.
3. Yes; greater during September, October; also February, March, and a portion of April.
4. Pneumonia and remittent fever, and the last two months, malaria.
5. Bad water and drouth.
6. In my practice I had but few cases.
7. In September.
8. No prevailing cause that I could name other than impure water.
9. Only four.
10. Exposure.
12. Good.
14. None.
19. Measles; I had 182 cases I visited; 14 I prescribed for at my office; all recovered except two—one lady about forty years of age; the other was a small child four years old.
20. February, March and April.
21. Yes; people staid at home and were careful that their children were not exposed.

ECKMANSVILLE.

REPLIES BY J. M. LOCKHART, M. D.

1. Yes.
2. Measles; very extensive; many cases complicated with pneumonia and bronchitis.
3. About the same.
4. Measles.
6. But few cases.
7. August.
9. Very few.
10. Mild.
14. None.
19. Few escaped; many adults attacked.
20. January and February.
21. No; a few families, by isolating themselves, escaped.

LOCUST GROVE.

REPLIES BY JAS. S. BERRY, M. D.

1. Yes.
2. Measles; widely spread; many fatal cases.
3. About the same, or less.
4. Typhoid fever.
6. More than usual.
7. September and October.
8. Heat and drouth.
9. Eight or ten.
10. Mild.
13. None in my locality.
14. None.
15. No.
16. No.
18. Not practiced here.
19. Epidemic.
20. February, March and April.
21. None that I know of.

ADAMS COUNTY—Continued.

MANCHESTER.

REPLIES BY J. W. GUTHRIE, M. D.

1. Yes.
2. Measles, the most extensive epidemic ever witnessed in this section. It began in the county adjoining us on the west and invaded our county on its western border, gradually traversed the county from west to east. Was of unusually severe type.
3. About as usual.
4. Measles and malaria.
5. Malaria, to the low water; water used by the country people was usually obtained from springs.
6. There were about 8 or 10 cases, all of which were either imported or had been visiting in localities where typhoid fever was prevalent.
7. August and September.
8. See answer to question 6.
9. None.
14. None.
19. See answer to question 2.
20. February and March.
21. No.

VINEYARD HILL.

REPLIES BY W. B. GRAHAM, M. D.

1. Yes.
2. Measles swept the entire county, and was very malignant.
3. About the same as previous years.
4. Pneumonia remittent and intermittent fevers.
5. I think not in any way removable.
6. None but imported cases, 3 in number.
7. September.
8. Bad water and noxious gases. The cases of typhoid came from Cincinnati on the Mill Creek Valley. All recovered.
9. None.
14. None.
19. There were but few families that escaped the epidemic that were liable to the disease.
20. February, March and April; the epidemic was attended with greater fatality than I ever knew.
21. I think not.

My experience has been, from careful observation, that pneumonia is always more prevalent when easterly or northeasterly winds prevail, the winds being elevated in crossing the Alleghenies from the east, and the moisture evaporated during the elevation, consequently it produces hypereæmia of the bronchioles, and results in an inflammation of the lungs. The most of the cases in this vicinity are catarrhal, some are complicated with malarial trouble.

WINCHESTER.

REPLIES BY C. S. CORBOY, M. D.

1. Yes.
2. Measles; during February, March and April; violent.
3. About average.
4. Typhoid fever and measles.
5. Yes. Our wells were very low, water scarce. The alvine dejections were not disposed of in the proper manner, in many cases being thrown on the ground or in privy vaults. There are no cases of typhoid here now. While the disease was not epidemic here there were quite a number of cases, most of which ran a typical course. As far as I can learn there were three deaths, one (under my own care) from intestinal hemorrhage, and two others (under the care of other physicians) as near as I can learn, from exhaustion. The epidemic of measles which occurred last spring was severe, several cases terminating fatally, most of which were caused by some complication of the respiratory organs. There was no scarlet fever.
6. Several.
7. September and October.
9. Less than usual.
10. Only 2 or 3 deaths as far as I know; these were croup.
12. Fair.
13. All the cases that I saw were contagious.
14. None, to my knowledge.
15. No. Only to a limited extent.
16. Not where I attended them.
17. Yes.
19. All persons not protected.
20. February, March and April.
21. Not much.

ALLEN COUNTY.

WEST CAIRO.

REPLIES BY J. S. CLIPPINGER, M. D.

1. Yes.
2. Measles general throughout the county. Unusual lung complications and fatality.
3. Greater than for several years.
4. Measles and typhoid fever.
5. Contagious, also impurity of well water, due no doubt to drouth.
6. At least one-half greater than in former years.
7. In October and November thus far.
8. In my practice, families who lived in houses the floors of which were on the ground.
9. Eight or ten, as near as I can recollect.
10. Mild.
12. Not good.
13. Only so far as it extended to different members of the same family.
14. Not at all in this locality.
15. As much as possible in diphtheria.
16. No, nor other children allowed to visit them.
17. Yes, from measles.
18. I think insolation and disinfection were the means of saving this community from an epidemic of diphtheria.
19. As an epidemic.
20. February and March.
21. Only so far as we could isolate families.

In almost all of our fevers the malarial element prevails. This is considered a very healthy locality. Have been here eighteen years, and presume we have not had over that many cases of true typhoid fever—very little scarlet fever—nor an epidemic of diphtheria.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

ASHLAND COUNTY.

LOUDONVILLE.

REPLIES BY A. J. SCOTT, M. D.

Referring to questions 1, 2, 19, 20 and 21—

The only epidemic that has prevailed here within the period named, was measles, during January, February, March and April, affecting great numbers and invading almost every family. The disease was very mild in character, and presented no special features, though in a number of cases it was said to be a second attack. There were only a very few deaths that were in any manner attributable to the epidemic, and then only when the victim was in *articulo mortis* from tubercle or some other grave complication, and there were no precautions whatever taken to limit its spread.

To questions 3, 4 and 5—

The amount of sickness in this locality was decidedly less than an average of previous years, and this uniform prevalence of health I attribute largely to the very light rainfall. This statement might require an explanation, but the legitimate space and time for an answer to your questions would preclude a lengthy disquisition, and it must suffice for me to say that many years of observation here enables me to say truthfully that a dry season is a healthy one.

To questions 6, 7 and 8—

There have been but few cases of typhoid fever, and of these more occurred in January than in any other one month, while conditions surrounding its development were neither plain nor positive. The cases generally occurred in houses which, though well kept and clean, were wooden structures, standing close on the ground, and had been occupied from 30 to 50 years or more. While in some cases the disease affected more than one member of a family, there was certainly no ground for belief that it is contagious, as smallpox and measles are, but on the contrary that it it is endemic, or exists by reason of some local cause; and that most of our cases were sporadic ones I attribute largely to intelligent nursing and a faithful observance of the laws of hygiene—in short to our advanced civilization and pure rural tastes.

And to questions 9, 10, 11, 12, 13, 17 and 18—

Only two cases of diphtheria were reported in this immediate vicinity, one of which died, and while these cases did not come under my personal observation, I think they were of the type recognized as diphtheritic croup, both occurring in the same family and at about the same time. The patient that died was about three years old, and the one that recovered about five years old. There may have been some conditions present in the house or its surroundings that developed the disease, but if so they were not easily recognized, and the disease did not affect other members of the family, of whom there were a number; besides it did not go beyond this one family, although there were no restraints or preventive measures resorted to to prevent its spread, and the children of this family mingled freely with others, therefore it was certainly not contagious.

Also to questions 14, 15 and 16—

There were evidently some cases of scarlet fever that appeared after our epidemic of measles, occurring during the spring and early summer months, but they were of mild type, characterized by the laity and some medical men as "scarlet rash," and received as a rule little or no medical treatment. But these cases often manifested much gravity in their sequelae, and then it, for the first time, became evident to the parents that their child had suffered from genuine scarlet fever. The sequelae in these cases were positive and pathognomonic. Fortunately, however, so far as I know, none of these cases proved fatal, either in the primary or secondary stage, which was no doubt the result of healthy surroundings and the favorable time in the year. I believe there was neither isolation nor disinfection practiced in these cases of scarlet fever.

In conclusion, men argue that diseases change, and while this is no doubt true, it is more pleasing to contemplate the fact that diseases disappear, and hope that in time they will cease to return. Ague has in a measure gone, because its germs could not remain after the woodman's ax had felled the forest and the plowman had brought the land up to a high state of cultivation. The same is probably more emphatically true of the terrible ailment known as "milk sickness." While cholera has its birth abroad, we have demonstrated that it is the child of filth, that we can prevent its emigration to our country by quarantine, and even stamp it out when it does land, with disinfectants and cleanliness. The same may be said of yellow fever, as was first demonstrated by Gen. Butler when he cleaned up New Orleans and made it comparatively healthy. Typhoid fever and diphtheria both no doubt originate in some germs of decomposition or filth that might be destroyed through intelligent and vigilant observation before they had prostrated physical power and endangered life.

The greatest medicine is surely preventive medicine, and the greatest problem that the medical profession has ever attempted to solve is to formulate hygienic laws so as to prevent disease, prolong life and thereby add to the measure of human happiness.

The time may be far distant when the full fruition of our hopes will be realized with reference to preventive medicine, but even now I think I can see the dawning of a better day, and, as in the past, so in the future of this good work, public hygiene must act a conspicuous part.

MIFFLIN.

REPLIES BY C. D. SACKET, M. D.

1. The only disease that prevailed in this locality during the past year, that would come under the head of epidemic, was cholera morbus, during July and August.
2. About 75 per cent. of the people had this disease; many were confined to bed for a week or more; the disease was of a very severe type.
3. Amount of sickness above average.
4. During winter months, acute bronchitis; the summer months, bowel trouble.
5. Summer diseases were most likely attributable to extreme dry, hot weather.
6. There were more cases of typhoid fever than for the past four years.
7. July, August, and September.
8. Bad water, owing to extreme drouth.
9. Probably about forty to forty-five.
10. A majority of cases mild; some were very bad; extremely so.
11. The disease was directly imported here from a town south of us, at one time last winter. The city of Mansfield has been the hatching place for diphtheria in our locality for several years.
12. Sanitary condition of some of the houses were good; others bad.
13. In one family were four cases, one little girl first being sick, and after three days the other three developed the disease. The three were isolated as soon as I took charge of first case; but I found they had all slept in the same room for at least six hours previous to my first visit. Three cases in one house this fall

ASHLAND COUNTY—Continued.

proved the same contagious nature of the disease as above four.

14. Not over four or five cases.
15. Isolation and disinfection were practiced in every case where possible.
16. I forbade all children affected leaving the room until entirely well.
17. Fortunately, there were no deaths among cases under my care for past year.
18. Isolation and disinfection are certainly the sheet anchor in fighting these diseases. I could most always limit disease to one or two families in our neighborhood.
19. Not over half a dozen cases.
20. One or two cases at long intervals.
21. Measles prevailed here about four years ago to such an extent that there was very little material around here for the disease to work on.

Health of neighborhood at present good.

MOHICAN.

REPLIES BY B. F. PAULLIN, M. D.

1. Yes.
2. Measles; 80 or 85 cases.
3. Less than the previous year.
6. No cases.
9. None.
14. None.
19. About all the young children were affected.
20. Last of November, December, and part of January.
21. Isolation of children and older folks.

The health of the community was exceedingly good.

RUGGLES.

REPLIES BY J. H. M'ILHENNY, M. D.

1. No; except measles.
3. About the same.
4. Measles.
6. None.
9. Twelve.
10. Mild sporadic cases.
13. No.
14. One case.
15. Yes.
16. No.
17. No deaths.
19. Pretty generally epidemic.
20. February and March.
21. No.

ASHTABULA COUNTY.

AUSTINBURG.

REPLIES BY W. O. ELLSWORTH, M. D.

1. No.
3. As far as I know about the same.
4. Nothing in particular.
6. Only two cases.
7. Both began in September.
8. Not known.
9. Six.
10. Moderately mild; only one death, first case, 4 years old.
11. Spontaneous.
12. Not good.
13. Cases all in one family; all children sick; and mother, father and myself had very sore throats.
14. None.
15. Yes, as far as possible.
16. No.
17. No.
18. Cases occurred in only one family.
19. Four cases in two families.
20. May and June.
21. Yes.

In reference to diphtheria, the first case, a child of 4 years, was taken with what seemed to be a very malignant form of the disease; affected the mucous membrane of nares and fauces; lived only 4 or 5 days. I was called in as counsel in this case, and retained for others. No precautions had been observed as far as isolation or disinfection were concerned, and all the other children, (five in all, at from 6 to 15) were taken sick at about the same time, or within 2 or 3 days. After I was called no visitors were allowed, and no one went or came except myself and one young gentleman. Precautions were also used in regard to my clothing and person.

CHERRY VALLEY.

REPLIES BY F. G. SPENCER, M. D.

6. None.
7. Not a case.
14. None.
19. From spring to present time.
20. October.
21. No.

For the past year epidemic influences have been rare and mild, mostly confined to catarrhal affections. No typhoid fever, diphtheria or scarlet fever. Icterus has prevailed to quite an extent during the months of September and October, dependent manifestly upon the quality of the water as affected by the prolonged drought. Measles have prevailed extensively all summer, the contagion being especially intense during October, attended by gastro-intestinal disturbances, usually making a troublesome complication to deal with, though no mortality from this cause. The amount of sickness has not been greater than in the years past.

CONNEAUT.

REPLIES BY J. LEE RICHMOND, M. D.

1. Scarlet fever has prevailed for two years.
2. Probably over a hundred cases this year; mild type; still quite typical scarlet fever; feebly contagious. Many children escaped, though in the house with the disease. Deaths were rare.
3. Somewhat greater.
4. Scarlet fever; typhoid and typho-malarial.
6. About 75 cases.
7. No opinion formed.
9. None certainly diphtheria.
14. See answer 2.
15. Not to a great extent, though recommended. The mildness of the disease accounts for the laxity of parents or neighbors in following instructions.
16. Not the schools where it could be prevented.
17. No.
18. Hard to judge.
19. Few, if any.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

ASHTABULA COUNTY—Continued.

JEFFERSON.

REPLIES BY JACOB COUP, M. D.

1. No.
3. About the same.
6. None.
9. Six.
14. None.
19. None.

LENOX.

REPLIES BY J. L. LAMB, M. D.

1. No.
3. Less.
4. Accidents.
6. One case.
7. February.
8. Bad sanitary surroundings.
9. None.
14. None.
19. Three cases.
20. May and June.
21. None.

A few cases of dysentery and cholera morbus occurred.

SOUTH NEW LYME.

REPLIES BY A. G. RATHBONE, M. D.

1. No.
3. Rather less than usual.
4. Jaundice.
5. No.
6. Only two or three cases.
7. September and October.
9. None.
14. Only one case.
16. No.
17. No deaths.
19. Quite a good many cases.
20. September and October.
21. No.

TRUMBULL.

REPLIES BY L. G. LELAND, M. D.

1. No.
3. Less.

This has been a very healthy year in my circle.

WEST WILLIAMSFIELD.

REPLIES BY J. W. GRAHAM, M. D.

In reply to your circular, I will say that, as to acute diseases, there has been less than an average. No epidemic; no scarlet fever or diphtheria; a few isolated cases of typhoid fever.

Broncho-pneumonia prevailed more than an average during February and March. August and September brought a little more than the usual amount of bowel trouble, which I attribute to a continued spell of dry weather producing low water in wells. No case of measles.

ATHENS COUNTY.

COOLVILLE.

REPLIES BY E. L. CARLTON, M. D.

1 and 2. No, not in town; but measles were all around us last winter and spring, but no special features.

3. About the same.
4. Typhoid fever along the Ohio river near here.
5. I think low and poor water.
6. Along the river.
7. August and September.
9. Very few.
14. Only a few cases.
15. No.
16. No.
17. Always in this county.
19. Had a pretty general sweep for miles around.
20. January, February, March and April.
21. No.

Our greatest trouble comes from muscular rheumatism or neuralgia and catarrhal troubles and consumption of the lungs.

GLOUSTER.

REPLIES BY E. F. DANFORD, M. D.

1. Yes.

2. (*a*) *Measles.*—First visitation about November 1st, 1886, the epidemic reaching its maximum about January 1st, 1887, from which it gradually declined, terminating its career about June 1st, 1887, after victimizing almost every liable person within a radius of four or five miles. There probably never before occurred so sweeping an epidemic of measles in this neighborhood, from the fact of its breaking out in the public schools before many were aware of its existence in the community, and because of the springing up of several mining towns in the vicinity, which bring in a population the children of which commingle more than any other class; hence all are exposed, and isolation next to impossible. The epidemic was unusually severe, a few deaths occurring when some complications occurred in cases where a bad condition of system prevailed.

(*b*) *Chicken-pox.*—Not an extensive epidemic, and mild in its character.

(*c*) *German Measles.*—This epidemic had its beginning about May 1st, 1887, attained its maximum about July 1st, and gradually declined, to disappear entirely about September 1st, 1887. It was limited almost strictly to the two or three villages situated close together here, the population being made up mostly of miners, not spreading to the surrounding country like the epidemic of Rubeola, showing the morbific principle to be less active than in the latter disease. But very few cases run as mild a course as described in the text-books; in several cases the temperature rose to 102° or 103°; only a few cases showed any bronchial or nasal catarrh, but most of them had sore throat, some very sore; one or two cases were attended with convulsions, and diphtheria of a very severe type complicated three or four cases, the diphtheritic process being implanted about the time of disappearance of the eruption. The disease was ushered in almost invariably with vomiting and sore throat, the eruption appearing in about twenty-four hours; no intestinal or renal complications; a few adults suffered; the post-cervical glands invariably enlarged, and many cases were followed by pustular eruptions over the head and extremities.

(*d*) *Whooping-cough.*—Not very extensive epidemic; one fatal case, which was complicated by convulsions.

3. Greater.

4. Measles, whooping-cough, German measles, bronchitis.

5. *Measles.*—Over-crowded, illy ventilated tenement houses, with general commingling of children of mining towns.

Whooping-cough.—No special cause more than its known infectiousness, as it was only

ATHENS COUNTY—Continued.

an ordinary epidemic, being more prevalent in the country than in the towns.

German Measles.—Same special features operated as in epidemic of measles.

Bronchitis.—In case of miners I attribute as a special cause the sudden change in winter season from the temperate condition of the mine to the cold air outside, and the fact that men often are wet on coming out of the mine and are chilled before reaching home.

6. Very few cases.
7. December and January.
8. Five cases occurred in two families on adjoining lots, both using water out of same well. About eighteen months before the occurrence of these cases four cases occurred in one house about one hundred yards distant from this well, the house being very much higher than the premises where these houses and well are located, they being near the bank of Sunday Creek, and the house where the four cases occurred being on the hill-side, the natural drainage being towards these houses and well.
9. About twelve cases.
10. Of medium severity.
11. Three cases of complicated German measles; but in no instance did more than one case occur in same house, so they were only sporadic cases.
12. Poorly ventilated, close, damp rooms, with bad hygienic surroundings.
13. No.
14. None.
15. In diphtheritic cases it was almost impossible to isolate, as most cases were in families of miners who only had two or three rooms and several children. Children were kept away from patient as much as possible, and not allowed to use utensils used for patient, etc.
16. Yes.
17. No deaths.
19. Widely.
20. December, 1886; January and February, 1887.
21. Schools closed, and children that had not had the disease were kept from houses where it existed as much as possible, but as about the first cases took sick while at school it spread rapidly and widely.

MARSHFIELD.

REPLIES BY C. BARKER, M. D.

1. Yes.
2. Diphtheria, measles, and whooping-cough.
3. About the same.
4. Measles.
5. Contagion.
6. None.
9. Ten to twelve.
10. Severe.
12. Poorly arranged for isolation and disinfection.
13. A boy attending school was exposed to diphtheria, and in due time the disease was developed, and boy was not permitted to leave the house. In course of a week another member of the family, female, aged two, was found to have fever, and the characteristic membrane covering tonsils and pharynx. This child had been no place to be exposed but at home. No other children of the immediate neighborhood contracted the disease.
14. None.
15. Far as possible under circumstances.
16. No.
17. No.
18. Did not extend beyond families where found.
19. Considerable.
20. March, April, May.
21. Very little.

MILLFIELD.

REPLIES BY A. J. LEARNED, M. D.

1. None except measles.
2. It was general.
3. Less.
4. None except measles.
7. Not a case during the year.
9. Three or four.
10. Mild.
12. Good.
13. None this year.
14. There were no cases.
19. There was a general epidemic.
20. January and February.
21. Scarcely any.

PLEASANTON.

REPLIES BY E. M. BEAN, M. D.

1. Not any.
3. Less.
6. Not any cases.
9. Five or six.
10. Light, except one case very bad.
12. Not good.
14. Not any cases.
15. Isolation, ventilation, and cleanliness; no disinfectants used. In bad cases, quarantine, and only nurse admitted.
16. No.
19. There were a number of cases.
20. February.
21. Not any.

SHADE.

REPLIES BY H. G. WITHAM, M. D.

1. No.
3. Less.
4. None.
6. Very little.
7. August and September.
9. None.
14. No cases.
19. A good many cases.
20. January and February.
21. None.

AUGLAIZE COUNTY.

CRIDERVILLE.

REPLIES BY JULIUS SHARP, M. D.

1. Yes.
2. Measles rather mild.
3. About the same.
6. Only two cases.
7. September.
9. None.
14. Not a case.
19. Largely.
20. March and April.
21. No.

In regard to the condition of health in this vicinity, I can safely say to you that we have had no unusual sickness during the past year. Our water is pure, and our people are gener-

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Note.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

AUGLAIZE COUNTY—Continued.

ally cleanly, and have their premises in good condition. The cases of typhoid we had were sporadic and resulted from malaria, and both recovered. The sanitary condition of our village is good; no diphtheria, no scarlatina, nor any contagion except measles, which was not worse than usual, but visited nearly every house that had not previously had them. We took no precautions to prevent its spread.

WAYNESVILLE.

REPLIES BY E. F. DAKIN, M. D.

1. No.
3. Rather less.
6. Four cases.
7. October.
8. None discernible.
9. None.
14. No cases.
19. Quite a number.
20. May and June.
21. No.

We have had in this vicinity an unusually healthy year, which I attribute mostly to the lack of moisture, it not being sufficient to produce vegetable decomposition. not having any rain since the 6th day of June worthy of note.

WAYNESFIELD.

REPLIES BY GEO. W. VICKERS, M. D.

1. No.
3. Greater.
4. Typhoid and remittent fevers.
5. Dry summer and fall.
6. Greater than usual.
7. September, October and November.
8. Dry weather.
9. None.
14. One or two cases.
15. Yes.
16. No.
18. I believe they prevented an epidemic of the disease.
19. Greater than usual.
20. February, March and April.
21. Same as in scarlet fever, with the exception of disinfection.

This fall typhoid fever has been more than usually severe, and malarial fevers very stubborn, some cases of remittent, assuming the typhoid condition. I attribute the unusual prevalence of these diseases in this locality to the extreme dryness and great scarcity of water.

WAPAKONETA.

REPLIES BY C. BERLIN, M. D.

1. A partial epidemic of measles and cerebro-spinal meningitis.
2. During the months of April and May there were some 8 or 10 marked cases of cerebro-spinal meningits, presenting the characteristics of that disease in a grave form. There were 3 deaths and 2 recovered after a tedious convalescence, 1 of six months with permanent deafness and paralysis, and 1 of four months with deafness, loss of one eye, and partial paralysis. The others all made a good recovery. Some cases were complicated with measles, an epidemic of which prevailed at the same time.
3. The amount of sickness otherwise less than usual.
4. Only the epidemics.
6. There were only a few cases of typhoid fever during the month of September.
8. No unusual conditions.
9. No diphtheria during the year.
14. No scarlet fever during the year.
19. The epidemic of measles was not very extensive, lasting only during the month of May, but was of malignant form, quite a number of that form termed "Black Measles." Some cases were also complicated with cerebral and spinal symptoms. About 10 per cent. of the cases were fatal.
20. Measles prevailed in the month of May.
21. No.

The fall months were especially healthy, notwithstanding the extreme dry weather. With many wells and cisterns and streams entirely dry, no effect has thus far been produced on the health of this locality.

BELMONT COUNTY.

BARNESVILLE.

REPLIED BY W. J. M'CALVIN, M. D.

1. No; endemic.
2. Typhoid fever of most malignant type.
3. Greater by one-third to one-half than last year.
4. Typhoid and scarlet fevers.
5. Scarcity of water in wells for drinking purposes and want of proper sanitary attention.
6. Almost endemic in city limits.
7. July, August, September and October.
8. Privy vaults and want of pure water.
9. Don't know; not many; light mortality.
10. Mild.
11. Have none.
12. Not good.
13. No.
14. Moderate; all cases mild.
15. No.
16. Yes; so far as I know.
17. Yes.
18. The disease being mild, there was little done.
19. Slight extent.
20. March, April.
21. Not particularly.

There was considerable typhoid in the Belmont County Children's Home, which was caused or presumed to be caused from stagnant water in the vicinity of the Home.

BELLAIRE.

REPLIES BY D. Q. STEERE, M. D.

1. Not any.
3. Less.
6. Very slight.
7. Fall and winter.
8. Not any.
9. Not more than six or eight.
10. Mild.
11. The disease was so trifling that I cannot tell.
12. Average.
13. No such evidence.
14. Slight.
15. As a rule it was.
16. I think not in any case.
17. But one death.
18. There was no spread of this disease.
19. There was considerable.
20. March, April and May.
21. Not any.

BELMONT COUNTY—Continued.

FLUSHING.

REPLIES BY J. V. WEBSTER, M. D.

1. Yes; diphtheria prevailed as an epidemic during the months of March and April, with the usual symptoms, except in some cases it was attended with a rash. The sanitary condition was not good. Thirty-eight to forty cases; origin not known. No conclusive proof of contagion. Attacks violent, but with few deaths.

3. About the same as the year previous

4. Diphtheria and malarial fever. We had little or no malaria in this locality until the building of a railroad, necessitating one of the longest tunnels in the state. The great amount of earth being exposed being one of the great causes of this disease.

6. Ten cases. But a great many cases of typhoid malaria, more than all others combined. We have been troubled a great deal with this malarial fever, every cold causing it to return.

HENDRYSBURG.

REPLIES BY W. M. JONES, M. D.

1. There has been no epidemic in this locality during the year ending October 31, 1887. The amount of sickness during the year, in my opinion, was less than usual. We had a a few cases of typhoid fever, some of them severe, but none fatal. The best cause, perhaps, that could be assigned was the unusually low water and its impurity. We had a few cases of diphtheria in a mild form. No cases of measles or cases of scarlet fever. The greater number of typhoid fever cases occurred during the months of July, August and September.

During previous years when typhoid fever and diphtheria prevailed here, it always seemed to me to prevail more as an epidemic, and not by contagion.

P. S. I will further state that for the last five or six years we have had quite a number of cases of malarial fever in this place and vicinity, but only a few cases in this last year.

BROWN COUNTY.

CROSS TOWN.

REPLIES BY GEORGE M'DONOUGH, M. D.

1. None.
3. The same.
4. None.
6. Very limited.
9. Five or six.
10. Malignant and fatal.
12. Fair.
14. No cases.
15. Not in all.
16. No.
17. Yes.
19. Have had none.

It might be said, in view of the financial prosperity of the M. D's, that the health of this locality has been unprofitably good.

DECATUR.

REPLIES BY L. C. LAYCOCK, M. D.

We had an epidemic of measles in this locality during January and February, last. Its spread was very rapid and extensive, scarcely any person who had not had the disease escaping it. No especial precautions were taken to prevent its spread, except, perhaps, in a few cases—isolation.

About the usual amount of sickness prevailed as in previous years. But three cases of genuine typhoid fever occurred, these during August and September. In all three cases the water supply was from wells almost exhausted.

Several mild cases of malarial and simple continued fever occurred.

Two cases of diphtheria, both children, in same family, one case very severe. the other mild. Sanitary condition good, except that the dwelling, a brick, was built with floor very close to ground.

Answer to question 15, yes; to question 16, no.

FAYETTEVILLE.

REPLIES BY JACOB M. HALL, M. D.

1. Yes.
2. Scarlet rash in an epidemic and malignant form that killed many children.
3. Greater.
4. The scarlet rash.
5. Think it was caused by a long drouth.
6. Slight.
7. Was one or two in October.
9. None.
14. See 2.
19. No cases.

FINCASTLE.

REPLIES BY J. L. BAIRD, M. D.

1. Yes.
2. Measles; quite general; severe in form; eruption delayed in many, none fatal.
3. Greater.
4. Malarial and typhoid fevers.
5. To long drouth, but may be only a coincidence.
6. Greater than usual.
7. September and October, 1887.
8. Drouth, probably.
9. Few, sporadic.
10. Very mild.
11. None.
12. Good as ordinary.
13. Not to my knowledge.
14. No cases.
17. No deaths.
19. Answered in No. 2.
20. January, February and March.
21. Simply avoidance of contact.

During September and October diarrhœal troubles, easily controlled, were common. Neuralgias quite common for the past month or six weeks.

FIVE MILE.

REPLIES BY S. B. SHELDON, M. D.

3. About the same.
4. Rather more of diphtheria.
6. No great extent.
7. October.
8. Contagion.
9. Fifteen.
10. Mild.
11. Contagion.
12. Not good.
13. Yes, more than one case in same family; other cases occurring several days after the first one attacked.
15. Yes.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

BROWN COUNTY—Continued.

16. No.
17. No deaths.
18. Where isolation and disinfection were practiced not much trouble in limiting disease.
19. No cases.

GEORGETOWN.

REPLIES BY YOUNG STEPHENSON, M. D.

1. No.
3. About the same.
4. None.
5. No.
6. None.
9. None.
14. A few cases in mild form.
15. Yes.
16. No.
17. No.
18. Were successful when strictly observed.
19. A few cases.
20. In September.
21. Yes.

RIPLEY.

REPLIES BY W. A. DIXON, M. D.

1. Of measles, whooping-cough, and roetheln.

2. The measles became epidemic about the middle of December, 1886, and continued several months; was characterized by its virulence, complicated often with bronchitis, broncho-pneumonia, and pneumonia. Many cases were adynamic in character. There were several deaths during the epidemic.

The whooping-cough came somewhat later; became a widespread epidemic, more formidable than usual, and continues to the present time.

The epidemic of roetheln began still later, and continued through the spring and summer months. This disease was diagnosed by some physicians scarlatina simplex. I am satisfied it was the disease defined by Dr. Bartholow, roetheln. It was usually mild, but very contagious.

3. The amount of sickness during the year was about the same as previous year, except during the latter month, October, fevers began to occur more than usual.

4. For more than a year we have had a larger per cent. of fevers than for some time. No other diseases more than usually present, except the epidemics above mentioned.

5. I attribute the increase in per cent. of fevers to impure water chiefly. Yet some of our physicians style all the fevers treated by them malarial, and if adynamic in type, typho-malarial.

Intermittent fever or ague is a very rare disease in this locality. If our fevers are malarial, then the cases of continued types are out of all proportion to the intermittent and remittent types.

The wells and cisterns and springs, from which many people obtain their drinking water, are but receptacles for drainage from manure heaps, cesspools, and other places of extreme danger. If greater care were taken to have pure drinking water, I believe we would have much less fever.

6. Typhoid fever has not prevailed to a serious extent, nor have there been so many cases at any one time as to attract great public notice or occasion alarm during the year, except in the month of October just past.

8. The general conditions that seemed to favor the development of the fever in the winter was a continued frozen state of the surface of the earth, with ice and snow covering up accumulated filth to poison the water; and the crowding into living and sleeping apartments, poorly heated and illy-ventilated.

In the autumn to scarcity of water in springs, wells, and cisterns, to the concentration of impurities, held in solution in the water, and neglect to purify the water by boiling, filtering, etc.

9. I have seen but three cases of true diphtheria during the year, and have heard of only a few cases besides.

10. The cases seen by myself were of recent date. The recovery was very slow in each case.

11. I am unable to determine any known cause in either case, and having used great caution to prevent communication, no other cases occurred in the same family with either case. The cases occurred in different families, widely separated, and no communication between them.

12. The sanitary condition of the houses was apparently good.

13. These cases offered no conclusive proof of the contagiousness of diphtheria.

14. Dr. J. C. Winters relates to me that he attended one case of scarlet fever in a child that had just received and worn a hood that had been worn by a child that died of scarlet fever about eighteen months previously.

I saw no cases at all. The case Dr. Winters saw resided several miles in the country, and no cases followed it.

19. Measles prevailed as general epidemic. I believe no one escaped that had not had them before, at the previous epidemic, about seven years ago.

20. It prevailed in the winter months.

21. The schools were not closed, and very few precautions were taken to limit its spread.

The village of Ripley has a population of thirty-five hundred; is located on the banks of the Ohio River, fifty miles above Cincinnati. Only a part of the town is subject to overflow. It is a very healthy place, and has not been visited by any epidemic of scarlet fever, diphtheria, or typhoid fever, like many neighboring towns.

The people who do not have private wells and cisterns are supplied with water from public drove wells, from eighty to one hundred and ten feet in depth. The water obtained from these wells is impregnated with iron and other matter.

It is observable that there is less sickness of zymotic character in all families using these waters than in those who do not.

I am happy to report that there are no avoidable causes to affect the exceptionally good health of our prosperous and happy people, other than above mentioned.

RUSSELVILLE.

REPLIES BY J. N. SALISBURY, A.M., M.D.

1. No.
3. Greater.
4. Typho-malarial fever.
5. Yes; no.
6. Not over twenty or twenty-five cases.
7. September and October.
8. Dry weather.
9. Twenty cases.
10. Mild.
12. Illy ventilated; filthy.
13. None.
14. None.
19. None.

Remarks.—Typho-malarial fever during the year preceding October 31, 1887, has prevailed to a greater extent in this locality than I have ever witnessed in the thirty-seven years that I have been practicing in this place.

By typo-malarial fever I do not mean a

BROWN COUNTY—Continued.

specific fever, different and distinct from combined typhoid and malarial fever.

If a person has itch and whooping-cough at the same time, it is not a new, distinct disease, but simply a combination of the two old diseases, itch and whooping-cough. So typho-malarial fever is simply a combination of typhoid and malarial fever.

6. *Typhoid Fever.*—Of this fever there have been in this locality probably not over twenty-five cases; and most of these were associated with or modified by malarial influences.

Inside a parallelogram, eight miles across east and west, and ten miles north to south, with Russelville in the center, there have been probably about four hundred cases of fever during the year.

Ninety-five per cent. of these were strictly typho-malarial; and still it would have been no misnomer, in ninety per cent. of the cases, to have designated them as typhoid.

During the past year in this locality, there have not probably been any cases of typhoid fever uncomplicated with malarial influences; while perhaps not fifteen per cent. of the cases of malarial fever were entirely free from typhoid symptoms.

I do not know that malarial influence mitigated the severity of typhoid fever cases. I do know that most of the cases of typhoid fever were not of that low grade we often encounter.

Fully one-half the cases of fever showed congestion or fullness of liver. And about the same proportion of the cases showed enlargement of spleen.

It has been said that hot and dry summers produce typho-malarial fevers. The past summer has not been so hot as many summers in which we have had no malarial fever; so that a hot summer alone does not develop malarial fever.

This has been the dryest summer that we have had for many years. Many wells were for a long time entirely dry, and most of wells were very low. The creeks were in most places entirely dry.

Stock is not permitted to run out; so that the vigorous vegetable growth of the early spring was not eaten down, but was wilted and destroyed by gradual decay.

Early spring growths in woods and out-fields gradually perished, in many places even to the roots, from excessive drouth.

The drouth and vegetable decay, I think was the cause of the great number of cases of *Typho-malarial fever.*

SARDINIA.

REPLIES BY J. B. M'CLAIN, M.D.

1. No.
3. Greater.
4. Typhoid fever and diphtheria.
5. I do; impure water, caused by drouth.
6. Almost epidemic.
7. August and September.
8. Heat and impure water.
9. One hundred.
10. Not malignant.
12. Ordinary.
13. Nothing more than all of same family would be affected.
14. We had none.
15. No.
16. No.
17. Yes.
18. Was not tried.
19. We had none.

We have had but few vegetables during the last year, and they have been of inferior quality; water was scarce and impure; weather extremely hot.

BUTLER COUNTY.

HAMILTON.

REPLIES BY JOHN M. PARKS, M. D., H. O.

1. Measles, 425; scarlet fever cases, 94—mild.
2. Very few deaths.
3. Less.
4. Scarlet fever and measles.
5. No special cause.
6. Eight cases.
7. November, December, January and February.
9. Thirty,
10. Severe—deposit great.
11. None traceable.
12. Some good; others bad.
13. Confined to families.
14. Ninety-four cases.
15. No; recent cases the rooms were thoroughly fumigated.
16. No.
17. No.
18. No cases of diphtheria have been communicated where the houses have been fumigated.
19. Four hundred and twenty cases.
20. November, December, January and February.
21. Not much—partial isolation.

There has been no special epidemic save those mentioned above.

JACKSONBOROUGH.

REPLIES BY J. B. OURBY, M. D.

1. No.
3. Less.
6. Several sporadic cases.
9. Three adults, and eleven children; no deaths; all well marked cases.
12. Dampness; poor ventilation; want of proper food and clothing.
14. One case.
15. Yes.
16. No.
19. Attended about 100 cases; three deaths—one pneumonia, the others cerebral meningitis; one a child 2 years old, the other 17 years.
20. January, February, March and April,
21. No; parents generally desire that their children should have the disease.

Scarlet rash and chicken-pox have prevailed.

MILLVILLE.

REPLIES BY W. S. HANCOCK, M. D.

1. Roetheln, measles, whooping-cough.
3. Same.
4. Intestinal.
5. Drouth and scarcity of fruit and vegetables.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

BUTLER COUNTY—Continued.

6. Four cases.
7. January and February.
8. Imported contagion.
9. None.
14. None.
19. Epidemic.
20. January and February.
21. No.

MONROE.

REPLIES BY JAMES MACREADY, M. D.

1. No.
3. About the usual amount.
4. Malarial fevers.
6. Ten cases.
9. Forty-four.
10. Most of the cases mild; three deaths from laryngeal conplication.
13. Yes; by production of house epidemics.
14. Twenty cases; one death.
15. As nearly so as could be enforced.
16. No.
17. Yes.
19. None.

Ten cases of typhoid fever occurred—five in one house, three in another, and the remaining two in separate houses. I regard clothing infected by the dejections of the first patient as the cause of the *house epidemics*. Circumstances in each case exclude the drinking water from the cause.

The extensive alluvial lands laying east, north and west of the village of Monroe are the habitat of malaria.

Forty-four cases of diphtheria occurred during the year. In one house there were five cases, and in another four; in three houses there were three each; in seven houses there were two each; and of the remaining cases but one case occurred in a house. The disease is fully as contagious as scarlatina. Four cases of scarlatina occurred in one house, three in another, four houses had each two cases, and five houses had each one case. In four houses, each containing several children but one of each family was attacked, though all were alike exposed.

Sixteen cases were scarlatina simplex, three moderately severe, and one scarlatina anginose of violent type.

In the unincorporated villages and the agricultural districts it is impossible to enforce sanitary measures or to prohibit public funerals without further legislation conferring arbitrary power for the enforcement of sanitary oversight of families and communities in which contagious diseases prevail.

OXFORD.

REPLIES BY J. B. PORTER, M. D.

1. No.
3. If anything, less.
4. None.
6. Very little.
7. October.
8. None; local causes.
9. Five.
10. Bad; laryngeal; three died.
11. Local.
12. Unsanitary surroundings.
13. None.
14. Four or five cases.
15. No.
16. No.
17. Yes.
19. Not at all.

ROSS.

REPLIES BY C. C. HOOVER, M. D.

1. Yes, diphtheria.
2. (See letter).
3. About the same.
4. Catarrhal.
5. (See letter).
6. None.
9. Seventy-five to one hundred.
10. Mild; catarrhal form.
11. (See letter).
12. Fair.
13. (See letter).
14. None.
15. Yes, in a measure.
16. No—possibly some exceptions.
17. (See letter).
18. The disease seemed to prevail generally.
19. But a few cases.
20. March and April.
21. Yes

No. 2.—Seventy-five to one hundred cases of diphtheria, principally of the catarrhal, only a few of the gangrenous form. Mortality light. The majority of fatal cases died of heart failure after the throat symptoms had abated.

No. 5.—No special cause discernible. The disease prevailed in mild, dry, pleasant weather, and in the best regulated and healthful locations and houses in as great frequency as elsewhere.

No. 13.—In March last the three-year-old son of Mr. F. F. S. was taken with diphtheria. There were no other cases here at that time. The child was probaly infected by some rags used about diphtheria patients and sold at the father's (F. F. S.'s) store. The child was nursed by the father, and their faces were often in close proximity. He was much more exposed than the others of the family, and was the only one of them to take the disease. Usually if one child of a family was taken with the disease the others subsequently suffered also.

No. 17.—Yes. Adults usually attended in limited numbers, and the burial occurred before the funeral service. Corpse not exhibited.

CARROLL COUNTY.

HARLEM SPRINGS.

REPLIES BY JOHN B. FRANCE, M. D.

1. No.
3. Much the same.
4. None but what is usual in our community.
6. No cases.
9. None.
14. Only in 4 families.
15. They were.
16. No.
17. Only one death; the funeral was public; no children attended.
18. It was limited to 4 families.
19. We had no cases.

The health of our community has been good for many years, which we attribute to the abundance of pure spring water and a free application internally and externally. We live in a section of Ohio in which pure springs abound of soft water, and quite a number of chalybeate springs are found. We have had no epidemic in our locality for 30 years. A rather poor place for a physician.

CARROLL COUNTY—Continued.

MECHANICSTOWN.

WM. M. CALHOON, M. D.

1. No.
3. Less.
4. Mumps.
5. These children's diseases arose generally by direct contagion.
6. I had 2 cases.
7. September and October.
8. Bad water.
9. Five or six.
10. Mild; no deaths.
11. I know of none.
12. Tolerably good.
14. We had none.
15. I did not look upon the cases as dangerous, hence did not keep them from others; used disinfectants.
16. No; they were kept at home.
17. No deaths occurred.
18. I had no trouble beyond the family the children usually would have it.

In regard to the measles, the patient is a school teacher and took sick in the school room, consequently we expect all of the children in this district to be down with the measles; will say, in regard to general health of this community, it has never been better than it has been this year in the seven years that I have been located here. We usually have quite a good deal of fever, but we have been using more precaution in hygienic measures; hence the people have been rewarded for their trouble.

CHAMPAIGN COUNTY.

CARYSVILLE.

REPLIES BY H. B. HUNT, M. D.

1. Yes; measles and mumps.
2. Measles and mumps, a number malignant; several deaths.
3. Greater.
4. Malarial and typhoid.
5. To the drouth, water so low in the wells.
6. Four-fifths more than common years.
7. August, September and October.
8. The drouth.
9. Ten.
10. Mild.
12. Good.
13. Yes; several members of the same family were attacked following each other.
14. None.
15. No.
16. No.
17. No deaths.
19. About 75 cases in a radius of two miles.
20. March and April.
21. Closing schools.

CHRISTIANSBURG.

REPLIES BY W. J. MEANS, M. D.

1. An epidemic of measles and mumps prevailed during the winter months. No special features were noted, except the severity of the former. No deaths from either.
3. About the same as in other years.
4. Pneumonia, during March and April, was more prevalent than for many years.
5. No special cause could be traced unusual to this locality.
6. To a limited extent; less than in former years. There were more cases during the months of August, September and October.
8. None. The fever partook somewhat of the malarial type. My diagnosis was "Continual malarial," although most physicians in the surrounding neighborhoods named it typhoid.
9. About twenty; cases benign. A few cases presented an ulcerative condition to a marked degree.
10. No facts can be obtained toward tracing the origin, except bad sanitary conditions in two or three families. No extensions from contagion.
14. Seven cases in the neighborhood during the year.
15. Isolation was carried out to the fullest extent.
16. No.
17. No deaths.
18. Two children, where sanitary conditions were perfect, were taken with scarlet fever in March. No communication with the neighbors was permitted; no more cases; four adults in the same house had the characteristic sore throat, with fever lasting 72 hours. Source of contagion not known. One child, aged 10, in a family five miles distant, was taken with scarlatina in April. Three other children in the family; case isolated before eruptions appeared; no others took it until two months afterward; isolations and disinfections were fully adopted; no further cases. In August a little girl in the same neighborhood took it; a brother was sent away from home and remained three weeks; disinfected room, clothing, etc.; no contagion. These cases were isolated from all known sources of contagion. I do not believe in the spontaneous theory, but have been unable to work out the source. No doubt in diognosis, course, conditions and sequela, all confirmed it. No precautions taken to prevent the spread of measles.

MECHANICSBURG.

REPLIES BY JOHN H. CLARK, M. D.

1. No.
3. About as previous years.
4. Dysentery sporadic.
5. No obvious cause.
6. A few more cases than usual.
7. August and September.
8. Drouth.
9. Twenty cases.
10. Sporadic—mild.
11. Unknown.
12. Fair.
13. No.
14. A few sporadic cases.
15. Yes.
16. No.
17. No.
18. Wholly successful.
19. A few cases only.
20. The spring months.
21. No.

MUTUAL.

REPLIES BY H. S. PRESTON, M. D.

1. Typhoid fever during last months of '86 and January of '87.
2. Nothing specially different.
3. About the same, except typhoid.
4. Nothing.
5. Can account for only seven or eight

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

CHAMPAIGN COUNTY—Continued.

cases. One child that had the fever was attended by a mother who knew no better than to throw the stools on the frozen ground near the well; school children who obtained the water for the school, to the number of six or eight, were taken sick from drinking the water. I am certain that this was the cause of their sickness. One patient, a man aged 35, thinks he took the fever by sowing fertilizer on wheat ground. He had the fever before any one else in the neighborhood.

6. Fifteen or eighteen.
7. September, October, November, December and January.
9. None.
11-14. None.
19. None.

ST. PARIS.

REPLIES BY JOHN J. MUSSON, M. D.

Within the present year two epidemics have prevailed in this region. The measles began in the early spring and continued more than three months. There was nothing unusual in symptoms or mortality. With the exceedingly hot weather of July, a form of fever variously styled malarial, typho-malarial and typhoid, put in an appearance. It was very mild. Nothing was more common than a marked exhibition of typhoid conditions at the inception of an attack, but the administration of quinine and its adjuncts for one or more days, invariably arrested the febrile motion, and established convalescence. This is my personal experience in not less than three hundred cases. In all cases, right at first, the indications were formidable, but in a few hours the patient was better, and in a few days well. The symptoms pointed to typhoid fever, while the disease was in the nature of an aggravation, and not at all serious. It was not malarial, if the *hematomatous malariae* is an indispensible factor. It was not typhoid, as we used to have it, because it killed no body. It came with the very hot and dry weather, and doubtless its existence was due to drouth and heat. Darwin's theory of evolution is as applicable to diseases as to plants and animals. Typhoid germs are not as dangerous now as formerly.

TERRE HAUTE.

REPLIES BY W. S. HUNT, M. D.

1. No.
3. Less; very healthy.
6. Very little.
7. September and October.
8. Bad water.
9. Ten cases.
10. Mild form.
11. Brought from Springfield.
12. Good.
13. They seemed to be contagious, as it was confined to one locality.
14. None.
15. Think not.
16. Cannot answer question.
17. No.
18. It did not spread.
19. General epidemic.
20. Winter and spring.
21. None of any consequence.

WOODSTOCK.

REPLIES BY W. J. GREEN, M. D.

1. Yes.
2. Measles; between 70 and 80 cases.
3. Less; very much less, aside from measles.
4. Measles.
5. Contagion was started in school.
6. Four to six cases.
7. September and October.
8. Low water in wells.
9. None.
14. None.
19. Seventy to eighty cases.
20. Last half of February and first half of March.
21. No; the whole school was exposed before it was known that there was a case in the place.

CLARKE COUNTY.

DIALTON.

REPLIES BY A. W. MITCHELL, M. D.

Chapman Creek passes something more than two and one-half miles east of Dialton, in a general southeast course to Mad River, which is about six or seven miles from the infected region. About the last of Aug., 1886, I was called to see a little girl living about one-half mile west of the creek. Found she had diphtheria. In a few days another case, a short distance further up the creek on same side. Two children in family, and the second one soon took it. About same time case No. 2 appeared in family No. 1. There were three children in the family, the youngest a nursing baby about a year old. The two older ones had diphtheria, while the youngest had, to all appearances, a typical case of scarlet fever, with complex desquamation, and sequellæ of albuminuria and otorrhea. Also mother had a severe and stubborn attack of quinsy at same time. All these cases finally recovered, except case No. 1, which was a weakly deformed child, who died from extension to the larynx. I may add that just about the time of recovery I was again called to see the father, who had a spell of malarial fever, which left him with a splenic tumor, reaching two or more inches beyond the median line and nearly to the groin. He soon passed into the hands of quacks, who were going to cure him in short order; but he is carrying it yet. Soon after the above cases appeared (only a few days), the case which I have marked as No. 5 appeared about one-half mile further down the creek. There had been no communication whatever between the families. This was a large family of children, in which isolation was impossible. Two died. The neighborhood was now thoroughly *scared*, and I think the quarantine was complete. However, in the course of the year following every child in all the families, in a territory reaching probably three miles in length and three-fourths of a mile back from the creek on the west and south side, had it.

August 16, 1887, I was called to Chapman Creek about midnight, in consultation. Found two cases of malignant diphtheria in same room and same bed. One dying. Fetor of breath in both cases very great. Room close and air bad. Stayed in the room probably an hour; examined throats pretty thoroughly. On the third day after, my wife took down with malignant diphtheria. This was the first case in Dialton. On the first day there were several children in the house, which was well ventilated. None took it. After this quarantine and disinfection were rigidly enforced.

September 20th, a little more than a month later, it appeared in the family of next door neighbor—a family of six children from eight months to ten years old. All had it except a

CLARKE COUNTY—Continued.

nursing baby. Small house and isolation impossible.

October 31st one new case in another family; six children from two to sixteen years of age. Sent patient up stairs. Isolation was complete. No more of the family took it. Room thoroughly disinfected after recovery. There were a few isolated cases through the country, but quarantine was established in all cases, and it did not spread. Isolation in the family was also successful when possible, outside of named area.

I draw the following conclusions from these cases:

1st. I attribute the prevalence of the disease in the infected district to impure water, which, in the case of children, resulted in diphtheria. In adults some had malarial fever (one case noted); others rheumatism, or whatever the special predisposition of the system would favor when brought under the depressing influence of the poison. The lay of the district is all about the same. The creek has a gravel bed; country rather rolling; some springs and occasionally gravel banks. Primary source of water supply may easily have been the same in all cases.

2d. I *may* have carried the disease to my wife.

3d. The next door neighbor's children *may* have taken it from running around where I had thrown disinfected (supposed to be) sputa, feces, etc. I had observed them there.

4th. Atmospheric influence favors the disease, and when a system furnishes conditions favorable for its development, diphtheria follows. The isolated and apparently sporadic cases favor this supposition.

5th. When once established in a family, the atmospheric influence is somewhat increased, but not greatly where isolation and ventilation are practiced.

6th. When once in a family, if isolation is not practiced, it will nearly always go through. When it is practiced, it can generally be limited, except where there is some special epidemic influence at work.

I will close by saying that the physician who attempts to treat diphtheria without the use of the bichloride of mercury, and also the chloride, leaves out of his armamentarium his greatest ally.

ENON.

REPLIES BY F. A. DUCKWELL, M.D.

1. No; some measles, but no epidemic.
3. About the same.
4. Typhoid fever.
5. To extreme drought.
6. To no great extent.
7. September.
8. Low water and presence of filth; hog pens, privies, etc.
9. One.
14. Only a half dozen cases.
15. Yes.
16. No.
17. No deaths.
18. Entirely successful.
19. Most every child over two years and upwards has had it.
20. March and April.
21. No.

N. B. For two or three years past measles and varicella have prevailed here with but very few deaths.

NORTH HAMPTON.

REPLIES BY M. STRAWSBURG, M.D.

In compliance with your request, I would say there was a greater amount of sickness in my locality during the year indicated than there was in previous years.

We had an epidemic of measles of a malignant type which prevailed in the months of April, May and June; it seemed that every person that had the least exposure to them contracted the disease.

There was more typhoid fever here than there had been for twenty years, and it prevailed in the months of August and September. I could not trace its prevalence to any special cause, as I live in what is termed a very healthy locality.

The excessive heat we had in the summer with a want of due care on the part of individuals predisposed to that condition of the system which we meet with in typhoid fever.

There was no epidemic of scarlet fever nor of diphtheria. We had the usual amount of pneumonia, and of that class of diseases that individuals are subject to during the spring months.

There was less diarrhœa this summer than usual.

PLATTSBUGH.

REPLIES BY CHAS. O. WELDASIN, M.D.

1. No.
3. Less.
4. Cholera-infantum; intermittent fever.
5. No.
6. None.
8. Hot, dry weather.
9. Four.
10. Mild.
11. None.
12. Good.
13. None.
14. Twenty cases.
15. Yes.
16. No.
17. No deaths.
19. Four cases.
20. May.
21. Yes.

SPRINGFIELD.

REPLIES BY W. W. HALL, M.D.

1. Yes; there was an epidemic of diphtheria, beginning about September 1, 1886, and ending about February 1, 1887. It started in the neighborhood of a cess-pool from a blocked and over-flowed sewer, then spread to all sections of the town.
3. Excluding diphtheria it was about the same as for preceding years.
6. Only a few cases.
7. September and October.
9. About two hundred and fifty.
10. It was more than commonly fatal; many cases of the malignant type.
12. Bad sanitary condition.
13. No conclusive proof.
14. Perhaps one hundred cases during the year but there were but few deaths—probably about fifteen.
15. No; not all; only to the extent advised and superintended by the physician in attendance.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

CLARKE COUNTY—Continued.

16. No; the school board and superintendent did not admit children from families in which either diptheria or scarlet fever existed.
17. Yes; almost invariably.
18. Difficult to state, as there was no special care taken in any of the measures.
19. None at all.

In the way of general information I would say that it is generally conceded that the sanitary care of yards, slops, and vaults is very, very bad, that our sewers are poor, and that taken as a whole, the condition of the city is bad.

SOUTH CHARLESTON.

REPLIES BY SOLON CURTICE, M.D.

1. Scarlet fever; since February.
2. Quite prevalent; but mild type.
3. Much less.
4. Malarial.
5. No.
6. Small.
7. None specially.
9. None.
14. Generally, but mild form.
15. Only limited in extent.
16. Very often.
17. About as usual.
18. Not any measures.
19. None.

The only striking fact of the past year from February, 1887, till now, was the many cases of scarlet fever, and only two deaths.

TREMONT CITY.

REPLIES BY A. H. NESBITT, M. D.

1. None.
3. Greater.
4. Typhoid fever.
5. I do not.
6. To almost epidemic.
7. November.
8. Vegetable decay.
9. None.
13. None.
14. None.
19. Only a few cases.
20. April and May.

CLERMONT COUNTY.

BATAVIA.

REPLIES BY ALLEN W. ASHBURN, M. D.

1. No epidemics during year.
3. Sicknesss did not vary from usual amount.
4 Scarlet fever.
5. Transported and by contact.
6. Not to exceed half dozen cases—each case attributable to water from overflow of wells and excess of animal matter in water consumed on account of prolonged drouth.
7. September and October.
8. Bad water.
9. Six; three cases isolated, and no second case; one not isolated by physician in charge, and three deaths in that family; malignant in character.
11. First three from unappreciable causes; last three contact.
12. Sanitary condition good.
13. Answered in question 9.
14. Thirteen cases, all in my practice; could not isolate in one family, and result was six cases; anginose variety; balance were cases in different families, isolated, and no second case; children not permitted to attend school or other public places.

15 and 16. Answered in 14.

17. Public funeral in three cases of diphtheria. Too soon to state results, as funeral occurred November 15, '87.
19. No measles.

Typhoid fever in this locality is directly traceable to bad water in all cases, save those arising among nurses as result of handling discharges of patient. Prevailed in September, October and November last.

BETHEL.

JULIUS D. ABBOTT, M. D.

1. There has been no epidemic in the last year. We had a good deal of flux and diphtheria in the fall of 1886, yet no epidemic.
3. About an average. Not so much typhoid as in 1885-86.
4. Diphtheria and flux as above named and bilious intermittent.
5. Could give no reason unless unusually dry weather; this, of course, refers to the last named. I could assign no cause for the first two named.
6. I had about a dozen cases in my practice.
7. August and September.
8. Low water in creeks, wells and springs.
9. About twenty in my practice—country; all as diphtheria. I suspect a great many cases are called this that are only severe ulcers of throat.
10. Mild; only two malignant cases.
11. Know no origin. (See 13).
12. Very good farm houses, and cases far apart—not in same neighborhood at same time.
13. I believe in the contagion of diphtheria, yet there is no conclusive proof. One family had three children; the oldest took it first, the youngest was still nursing. I sent the second one away from home; I could not send the infant and mother. A week after the eldest had it the mother and infant both took it. The second child I had sent away escaped. It is possible the others got it from the same source as the first child, and not from the patient. I have had plenty of real diphtheria; visited only one of many in a family, and no unusual precaution taken; again I had a family of eight (parents and all) take it one after another in succession. For only one of a family to have it is rare in my practice.
14. Only one mild case; patient came from Greenfield with it.
15. So far as is practicable in country practice.
16. No.
17. Public in form, but not attended.
18. Can give no definite answer.
19. No measles.

Remarks.—With modesty I would like to say a word in regard to the spread of the dreadful typhoid fever now raging in Cincinnati and many other parts of the country. I think the profession is too careless in diagnosing their cases; for many are called malarial fever that are real typhoid, and consequent carelessness in regard to disinfection, followed, of course, by spreading of disease. I have a case on hand now, brought from Cincinnati in third week of sickness, who had been doctored all that time for malarial fever. He is now in wild delirium, swollen bowels, with fearful hemorrhage from them, and will

CLERMONT COUNTY—Continued.

die in last stage of malignant typhoid fever. Now, it strikes me, if I should say this was malarial fever, and use the same precautions to prevent its spreading that malarial fever demands, I would certainly have more cases.

EDENTON.

REPLIES BY T. F. DICKINSON, M. D.

1. Yes.
2. Scarlatina—extensive and mild.
3. Usual amount.
4. Scarlatina and diphtheria.
5. Contagion or infection; by isolation.
6. None.
9. Twelve cases.
10. Mild.
12. Good.
14. Epidemic.
15. So far as possible.
16. No.
17. No.
18. Can not tell, as some of the patients were taken with the disase at a campmeeting, and in consequence the opportunities for contracting the disease were many, and not under control.

FELICITY.

REPLIES BY W. H. AIKEN, M. D.

1. Yes.
2. Scarlet fever. The cases that occurred during the fall of 1886 were very mild. Those occurring during the spring and summer months were more malignant in type, several deaths occurring.
3. About the same as years previous.
4. Scarlet fever.
5. Cannot attribute it to any special cause.
6. Have had a few cases of typhoid during September and October of this year—about ten cases up to present time.
7. September and October.
8. Am unable to state under what conditions it was developed; supposed to have been produced by the excessive drought and poor water.
9. Ten or twelve.
10. The cases that occurred in this locality were mild; no deaths occurred.
11. Do not know any facts as to the origin.
12. The sanitary condition of the houses was good. Every member of the family that was not grown had diphtheria where isolation was not practiced.
13. Yes; a child was taken on a visit by its parents to a family in which there was a severe case of diphtheria. It was not permitted to enter the room of the sick child, but had an attack of diphtheria in ten days after.
14. Fifty or sixty cases in this locality during the year.
15. Yes.
16. No.
17. No.
18. We were successful in limiting the disease to families in thickly populated parts of the town.
19. Limited.
20. April and May.
21. Yes.

GOSHEN.

REPLIES BY A. MORRIS, M. D.

No epidemic of any kind has prevailed in this locality during the past year.

During the first half of the year we had about the usual amount of sickness, but not of any specially prevailing type. The last half of the year has been unusually healthy—less sickness than at any time during the same period in the last fifteen years.

We have had but few cases of typhoid fever during the year, and they were difficult to trace to any special cause. The last case was brought from Cincinnati about six weeks ago, and is now convalescing. I have had, in my own practice, ten cases of diphtheria, and several others occurred in the practice of other practitioners. I was not able to trace my cases to any special cause, the families in which they occurred seeming to have good sanitary surroundings. In most of the cases observed by me, the gravity of the constitutional symptoms were out of all proportion to the local manifestations, and were marked by early prostration, and in these cases, exceedingly slow convalescence. In one case there were frequent relapses, the last appearance of the false membrane being on the fiftieth day from the outset of the disease. My youngest patient was two and the oldest fifty-nine years of age. In all cases disinfection was used, and isolation as far as practicable. The children in the families in which these cases occurred were kept out of the public schools. I saw no evidence of its contagiousness. In the only death that occurred a public funeral was held, but I understood at the time that it was contrary to the advice of the attending physician. My own advice is always against this practice.

I have no knowledge of any cases of scarlet fever or measles in this locality in the last year. There were a few of roethlen during the spring months.

At the present time there is almost no sickness at all in the community.

LOVELAND.

REPLIES BY W. A. CARMICHAEL, M. D.

1. No.
3. About the same.
4. Malarial fever.
5. No.
6. None.
7. September, October and November.
8. Want of pure water.
9. About 25 cases.
10. Many malignant.
12. Fair.
13. It usually attacked the whole family.
14. A few cases; no epidemic.
15. No; it occurred in families illy prepared to separate.
16. No.
17. I believe not.
18. From the fact that the disease was confined to a few families, not spreading.
19. But few cases.
20. Last spring.
21. Yes; the few cases that occurred were kept from school, etc.

On an average we have had a healthy year in this locality.

MARATHON.

REPLIES BY S. B. JUDKINS, M. D.

1. No.
2. None.
3. About the same.
4. None.
6. A few cases.
7. September.
8. Hot, dry.
9. Not known.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

CLERMONT COUNTY—Continued.

10. Mild.
12. Bad.
14. No cases.
16. No.
17. No.
19. None.

MILFORD.

REPLIES BY R. C. BELT, M. D.

1. No.
3. I think less for the year.
4. None.
6. Limited.
7. August, September and October.
8. Impure water.
9. Eighteen.
10. Mild in nature.
12. Bad.
13. No; only one case.
14. None.
19. Only a few cases.
20. March.
21. No.

NEW PALESTINE.

REPLIES BY ALBERT SAYLOR, M. D.

No epidemics in my territory have occurred during the past year, excepting measles; in these cases I believe no physician was employed.

I have heard of two or three cases of typhoid fever five miles from here. There is no occasion or excuse for frequent typhoid fever here. One case was contracted two miles from here this fall. The patient, a teacher, went home, five to ten miles away.

The measles mentioned occurred last spring. The greatest amount of sickness here this year was during June, July and August.

About same amount of sickness this year as in 1886. Neuralgia, rheumatism and female complaints are the most common.

NEVILLE.

REPLIES BY N. S. HILL, M. D.

1. Yes.
2. Measles; nothing of interest. Bronchitis, mild form.
3. Less; less malarial fever than in 22 years.
4. Probably bronchitis, in March.
5. Nothing special; cold, damp atmosphere.
6. Not one case.
9. About 12 cases.
10. Mild.
11. Imported from Kentucky by a young lady from the infected district.
12. Not good.
13. It would affect most of the family, sometimes all.
14. A few sporadic cases.
15. Yes.
16. One case attended a country school; the family were most of them sick; some only fore throat, some eruptions; no spread in school.
17. No deaths.
19. Most of the children; no fatal cases.
20. March, April and May.
21. Think not.

Neville, 450 inhabitants; situated on a low bottom on Ohio River.

OWENSVILLE.

REPLIES BY J. S. COMBS, M. D.

1. No.
3. Less.
9. Eight cases.
12. Bad.
14. None.
19. None.

CLINTON COUNTY.

BLANCHESTER.

REPLIES BY LYMAN WATKINS, M.D.

In answer to your circular asking for a report of the state of health in this town and vicinity for the past year, I can only give my own experience, and what I may have learned in a general way in regard to the experience of other physicians practicing in this neighborhood. There has been no epidemic of any kind prevailing in our town in the last year, and the amount of sickness in this locality has been about the same as during previous years. No diseases were more than usually present except measles. Typhoid fever occurred in about the usual number of cases, amounting to perhaps twenty in all during the year. The greatest number of cases occurring in January, 1886, and October, 1887. The atmospheric conditions were exactly opposite in these months, for, while the weather was soggy, wet and cold in January, in October it was very dry and unseasonably hot. The water supply was from wells. The stools were not disinfected, but were usually thrown carelessly about upon the ground. No general conditions were noted which seemed to favor the development or spread of typhoid.

There were but few cases of diphtheria, and they were very mild. There was but one case of scarlatina occurring in this vicinity during the year, and there was some doubt in regard to the diagnosis of that case.

Measles occurred here to a considerable extent; about forty cases in all, I presume. I cannot tell more definitely, for the course of the disease was so mild that in many cases no physician was called. There was, however, one death from this disease, an infant in convulsions. The disease occurred during the months of June, July, and August. The weather was mild. There were no bad sequelæ. No extraordinary precautions were taken to prevent the spread of the disease; indeed, so mild was the affection that in many cases it was purposely contracted.

It might be of interest to mention that during the prevalence of this attack of measles there was another disease also prevailing which resembled measles somewhat, but which was not true measles; for those affected would often subsequently have an attack of measles. We called it bastard measles. It was a mild affection; the eruption was not diffluent, and the red spots were smaller than those of measles.

CUBA.

REPLIES BY ELDORADO BRIGGS, M D.

1. Yes.
3. Greater.
4. Fever.
6. Extensively.
7. August and September.
9. None.
14. None.
19. None.

In answer to your fourth inquiry, "What diseases were more than usually present," I would say, continued fever.

The same type of fever prevailed here as in

CLINTON COUNTY—Continued.

other parts of the State, so far as my inquiries extended, and was regarded as *typhoid fever*.

In your eighth query, "What were the general conditions that seemed to favor its development," in no instance could I discover any faults in either public or private hygiene in excess of that of preceding years when no fever prevailed; nor did it appear more prevalent where drinking water was scarce or of poor quality.

To two general conditions only can I trace a causative relation. First—A general lowered health state or vitality, traceable to derangement of the gastro-intestinal canal. Second—Climatic influences, such as sudden changes of temperature and marked changes of temperature from day to night; or, in other words, warm days and cold nights.

MARTINSVILLE.

REPLIES BY C. E. VANCE, M.D.

1. I only came here July 7, 1887.
2. After coming, I had some diphtheria and measles.
4. Diarrhœal troubles.
9. Two in my practice.
19. I had two cases.
20. October.
21. Children kept home, and balance of family had had it.

NEW ANTIOCH.

REPLIES BY H. WHISLER, M.D.

1. No.
3. Less.
6. Only two cases.
9. None.
14. Had none.
19. Had none.

NEW VIENNA.

REPLIES BY R. T. TRIMBLE, M. D.

1. There has been no epidemic in this place during the past year.
2. There has been less sickness than usual, though during the months of August and September there were a few cases of a severe form of malarial fever (so-called typho-malarial fever).
6. There have been, as far as my knowledge extends, but two cases of genuine typhoid fever during the year ending October 31st. One occurred in November, with this history: In September previous an old woman who worked at different places in the near neighborhood, and also took in washing, living in an old, dilapidated house, was taken down with typhoid fever. The disease could not be traced to any foreign source of origin, though I made careful inquiries. If it originated here it is the first instance of typhoid fever originating in this locality in my knowledge in a practice of sixteen years. In every other instance where it prevailed I could clearly trace it to a foreign source. This old woman's daughter, married and living some four miles in the country, came and nursed her. After her mother's recovery the daughter returned home and was soon sick with the fever herself. Her mother-in-law nursed her, and also contracted the disease. This last is the case mentioned as occurring in November. The other case occurring during the year was the case of a young man from Cincinnati who came here in April last sick with the fever—a typical case of typhoid. Of the cases mentioned one proved fatal. I have always been able, if in charge of the patient in time, to prevent the spread of the disease by disinfecting the stools with carbolic acid and having them buried.
9. It is doubtful whether we have had any case of true diphtheria here during the year, though there have been a few suspicious cases.
13. I have no doubt of the contagious nature of diphtheria from past personal experience, having twice contracted the disease from having little pieces of membrane coughed into my face while making applications to the throats of unruly children.
14. There has been no scarlet fever.
16. Children were not allowed to attend school from families if there was any suspicion of diphtheria.
19. A few cases of measles during latter part of winter—not more than six or seven—mild.
21. Simply isolation.

The health of our people, while neighboring towns were scourged with fevers during the prolonged dry weather, is, I think, largely owing to the fact that last spring we drilled for natural gas, which we failed to find, though we went to the depth of some 1,700 feet. But at a depth of some 250 or 300 feet a strong vein of water—very pure and soft—was struck. When the well was abandoned a plug was put in below the water vein and the iron caisng left. In this way a fine flowing well of almost absolutely pure water was obtained. Most of our people used this water during the dry season almost exclusively for drinking water.

OAKLAND.

REPLIES BY GEO. B. CRAWFORD, M. D.

1. Not for four years.
3. Less than for twenty years.
4. Malarial.
5. Bad water.
6. Six or seven cases.
7. Autumn.
8. Bad water.
9. None.
14. None.
19. None.

REESVILLE.

REPLIES BY J. G. M'CLANAHEN, M. D.

1. None.
3. Less.
4. Dysentery.
6. Eight cases.
7. In September and October.
8. Impure water.
9. None.
14. Had none.
19. Had one case this year.
20. April.
21. Yes.

SABINA.

REPLIES BY S. B. LIGHTNER, M. D.

1. Yes.
2. Typho-malarial; it was confined almost exclusively to the village. There were about one hundred cases in the town since the first

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NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

CLINTON COUNTY—Continued.

of June and not more than ten or fifteen in the country. There were five deaths in the town and one in the country—five from hemorrhage and one from perforation of the bowels.

3. Greater in the town; less in the country.
4. Typho-malarial fever.
5. Yes; no.
7. August and September.
8. Hot weather and low water.
9. Have practiced here seventeen years and have never seen a well marked case of diphtheria in this locality.
14. None.
19. None.

COLUMBIANA COUNTY.

DAMASCUS.

A. M. AILES, M. D.

There has been no epidemic of note during the year ending October, 1887. In February and March we had a number of cases of scarlet fever, but of the mildest type; only one death from it, and that was the result of complications.

The amount of sickness has been about the same as in previous years. There have been but two cases of typhoid fever during the year, and they occurred during the month of October, in the same family, one resulting in death. People in this vicinity, for the most part, are Quakers, and they are very careful and temperate in their manner of living. Since the water in the wells has been low, many of them take the pains to boil their drinking water before using it. They are very careful to have their surroundings in a healthy state, allowing no unhealthy stench about their premises, and are always glad to receive any information on care of health. There have been no cases of diphtheria in our vicinity this year, although at the town of Salem, five miles distant, they have had quite a scourge of it. There were a few cases of measles in March, but of a mild type, and did not spread to any extent.

EAST PALESTINE.

A. S. M'CASKEY, M. D.

An epidemic of a malignant ulcerated sore throat prevailed in this locality during the month of October and first part of November, I could not call it diphtheria, as there was no diphtheritic deposit except in three of the cases I attended.

It lasted about six weeks, but was more violent the first three weeks. Number of cases in my own practice, fifty-two. There were about ten or twelve cases of diphtheria. It seemed to be principally among children. I think the sickness greater here in October and November than for a number of years.

Pseudo membranous croup prevailed here more than usual. I attribute it to the epidemic that prevailed here. There were more cases of membranous croup than was ever known here before. The causes can partly be removed; impure water can be remedied, and better sanitary means used.

About seven cases of typhoid fever in this locality during the year. Four cases in the month of September. Most of the cases of this disease were contracted away from here.

Attended eleven cases of scarlet fever during the year. These during March and April.

Isolation and disinfection were practiced in the majority of the cases.

The children were not permitted to attend school from the houses in which these diseases prevailed.

Schools were closed during the epidemic, and sanitary measures used to some extent, but not thoroughly.

Public funerals were held in cases of death from diphtheria and typhoid fever, and I think helped to spread these diseases.

Where isolation and disinfection were used, they did most assuredly help to limit the disease.

There was no measles in this place during the year, as far as I can learn.

ELKTON.

REPLIES BY S. R. BREED, M.D.

1. No.
3. Rather less.
4. Typhoid fever.
5. Hot weather and bad water.
7. July and August.
9. None.
10. Very mild.
12. Poor.
13. Not any.
14. Very few cases.
15. I know only of two families.
16. No.
17. No.
19. Some cases.
20. In March.
21. No.

HANOVERTON.

REPLIES BY WM. D. M'CLEERY, M. D.

1. No.
3. Less.
4. None.
6. One case.
7. September.
9. None.
14. Five or six very mild cases.
15. No.
16. No.
17. No deaths.
18. To three families in the country.
19. Four cases in one family.
20. April.
21. Isolation.

KENSINGTON.

REPLIES BY B. G. BATTIN, M.D.

1. No epidemics of any kind have prevailed in and around here for the year spoken of.
3. The amount of sickness was much less than former years.
4. Bowel diseases; diarrhœa of a bilious form; cholera infantum; colds.
5. I attribute them to the low condition of the water in the wells, and springs being very dry.
6. No typhoid fever in this locality.
7. No cases.
8. There were no general conditions to favor the development of typhoid fever.
9. There were no cases of diphtheria in this locality last year.
12. The citizens of this vicinity are careful about their house drainage; careful to remove all rubbish.
13. No cases of diphtheria.
14. There were but two or three cases in one family in April last very mild; did not go out of the one family.
15. No persons allowed but those that had the care of the cases; complete isolation and

COLUMBIANA COUNTY—Continued.

disinfectants were used; all recovered finely.

16. No.

17. None had.

18. In every case where isolation was observed the disease has been limited.

19. There were no cases of measles in or around here to my knowledge.

The health of this part of the country has been extremely good as to fevers and other epidemics for the past year. Much has been done by intelligent persons to educate the community in regard to cleanliness and means to avoid epidemics and all contagious diseases, and it has done good.

NEGLEY.

REPLIES OF C. M. VALE, M.D.

Diphtheria has prevailed as an epidemic in this locality since about September 1st. As near as I can learn there have been about twenty-nine cases. I have had nineteen cases under my own care.

As to the contagion of diphtheria, I will say that just six days after I brought a portion of deposit home for examination, one of my children took the disease; seven days after the first, another, and six days following still another one was affected with diphtheria.

We have had three cases of typhoid fever; all in the months of September and October, and all attributed to bad weather.

Scarlet fever prevailed here during the months of February, March, April, and May. Eleven cases in all, I believe.

Measles—four cases; in the months of April and May.

Pneumonia, one.

Cholera infantum, five cases with one death.

The sanitary condition of our town is good.

NEW LISBON.

REPLIES BY JOHN N. CALHOON, M.D.

1. No.
3. Greater.
4. Typhoid fever and scarlet fever.
5. Stagnant water. Could be removed.
6. Greater than any year previous.
7. September and October.
8. Drouth.
9. Twelve cases.
10. Mild in character.
11. Filth.
12. Bad.
13. No.
14. Greater than any year, excepting 1879, for the past ten years.
15. Yes.
16. No.
17. No.
18. Wherever these measures were carried out (strictly), it seemed to limit the spread of the disease.
19. Only two or three cases.
20. April.
21. No.

COSHOCTON COUNTY.

WEST BEDFORD.

REPLIES BY W. B. LITTEN, M.D.

1. No.
3. About the same as other years.
6. But few cases.
7. August and September.
9. But two.
10. It was of simple form.
12. Good.
14. No cases.
16. No.
18. I think the measures used prevented the disease.
19. No cases of measles.

Diphtheria was brought to the neighborhood by a young lady who was teaching school when diphtheria prevailed. Her brother was next to take the disease; both cases were of simple form, and terminated favorably. I should have said the second case developed after the use of disinfectants, isolation, and cleaning of house.

WEST CARLISLE.

REPLIES BY J. T. EDWARDS, M.D.

1. No.
3. About the same as previous years.
4. Rather more typhoid than usual.
5. Not attributed to any known cause.
6. There were twenty cases; that being more than usual.
7. In the months of last November and December.
8. I know of nothing unusual in the conditions.
9. About twenty-five or thirty cases.
10. Rather mild in form.
11. Nothing known.
12. Generally good.
13. No.
14. Not any cases of scarlet fever in neighborhood.
15. Disinfection practiced in cases of diphtheria.
16. Children of families with diseases were kept out of school.
17. Yes.
18. Don't know.
19. Not any cases of measles.

WEST LAFAYETTE.

REPLIES BY F. H. YARNALL, M.D.

1. Yes.
2. Measles, of a mild type.
3. Less.
6. Limited.
7. September and October.
8. Low water.
9. None.
14. None.
19. Large extent.
20. December and January.
21. No.

CRAWFORD COUNTY.

BUCYRUS.

REPLIES BY J. B. KREIDER, M. D.

Diphtheria has been somewhat prevalent in our city within the last year; confined to the fall and winter months, mostly prevailing during September and October of 1886. I have had in my own practice over thirty cases; had five cases in one family; these cases were not all confined to the limits of the city. There have been in the city during the epidemic from ten to twelve deaths. For the last six months we enjoyed immunity from the disease, with the exception of a few cases within the last month, supposed to have been contracted at our neighboring city, Crestline. Diphtheria when prevalent occurred in families where the sanitary condition was good,

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NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

CRAWFORD COUNTY—Continued.

as well as in those where it was not, and was not confined to any particular portion of the city, but could, in some cases, be traced to direct contact with individuals infected, and thus gave evidence of its contagiousness. Complete isolation was not always practicable. Disinfection was practiced in all cases that came under my observation. Families wherein it existed were not permitted to attend school or other public gatherings; funerals were generally public, but if they contributed to the spread of the disease the fact was not recognized.

The amount of sickness in our locality during the year has been no more than in previous years, with the exception of the specified epidemic. Bad sewerage may have had its influence, which defect has this year been removed. Over forty thousand dollars have been spent in the construction and improvement of sewers during the past year.

There have been a few cases of typhoid fever reported during the summer, but it has not prevailed as an epidemic. I have not had a case of genuine typhoid, but had a few cases of typho-malarial fever during September and October of this year.

There have been cases of scarlet fever reported, but have not seen any cases lately.

We have had cases of measles last spring and winter, but did not occur as an epidemic, but seemed to be endemic, and was brought from a distance by fomites.

POPLAR.

REPLIES BY F. W. SCHWAN, M. D.

1. No.
3. Somewhat less.
6. No typhoid; a few complicated malarial cases.
7. August and September.
9. Eighteen or twenty cases.
10. A few malignant, others mild.
11. Do not know.
12. Quite good.
13. The malignant cases seemed contagious, being exposed and brought from an infected district seven or eight miles from here.
14. None.
15. As far as possible.
16. No.
17. Yes.
18. Cannot say.
19. None.

Remarks—Had during July, August and September a large number of cases of dysenteric diarrhœa, of a very protracted type, but only a very few deaths. A few with pneumonic complications.

CUYAHOGA.

BEDFORD.

REPLIES OF R. S. HUBBARD, M. D.

3. Less than for ten years.
4. Typhoid fever.
5. Probably due to very dry weather, and consequent failure of water supply, many wells going dry. Water generally bad.
7. September and October.
9. Not to exceed six or eight.
10. Mild; no deaths so far as I know.
12. Varied; sometimes bad, but often good; some of the worst cases occurring where sanitary conditions seemed nearly perfect.
13. No.
14. Very few cases.
15. Yes, always.
16. No.
17. No.
18. Often limited to single case, occasionally to one or two of same family, but never spread outside of house; quarantined.
19. Fifteen or twenty cases.
20. April and May.
21. Same precautions as in scarlet fever and diphtheria.

CHAGRIN FALLS.

REPLIES OF H. M. DOTY, M. D.

1. No.
3. About the same.
4. Not any.
6. Not any.
9. No malignant cases,
10. Mild.
14. Not any.
19. A very few mild cases.

CLEVELAND.

REPLIES BY DR. G. C. ASHMUN, H. O.

1, 2. An epidemic of measles, which began in 1886, continued until the summer vacation of public schools in 1887. The whole number of cases cannot be stated, but there were about sixteen hundred cases reported to the health office, which was probably not more than one in four of all cases occurring. The mortality from this cause reached about one hundred and fifty.

3. The number of deaths was greater, and it is probable that the number of both cases and mortality increased

4. Diphtheria and typhoid fever, among zymotic diseases, and acute and chronic lung diseases.

5. In respect to diphtheria, the most common conditions found and regarded as causative, were overcrowded and poorly ventilated sleeping rooms, a confined air and moisture under sleeping and living rooms.

6. About three hundred cases of typhoid fever were reported to the health office, which was, perhaps, three-fourths of the whole number of cases.

7. September, October and November.

8. Have no satisfactory explanation. The newer portion of the city where well water was used and where sewers were not built suffered the most, but not exclusively.

9. About twelve hundred cases were reported to the health office, which, allowing for errors of diagnosis and failure to report, may be regarded approximately correct.

10. In the spring and summer months of 1887, the fatality among cases reported was about one to two and a half or three. Later it was less fatal, but for the entire year it was greater than one to four.

11. On one lot were two houses—three families, with ten children. In one family were six children, four of whom were taken with diphtheria within a few days of each other, and all died. The other two were sent away for three or four weeks. On their return both had the disease, and one died. Both children in the other family in the same house had it, and one of them died. Both children in the other family and other house had it but recovered. Neither house had a cellar or other ventilation under the floor, and the soil under both was excessively damp. In another instance, where a child had the disease, two sympathetic neighbor women, mothers, came in to see and help, and in six days each had a case in her own family. Such instances are numerous.

CUYAHOGA COUNTY—Continued.

12. Always defective in some important particular.
13. Nothing more conclusive than given in answer to question 11.
14. About three hundred cases were reported to the health office; fatality very small.
15. In most, but not all.
16. They were not allowed to attend public schools, but were not otherwise restrained.
17. No.
18. Cannot tell.
19. As stated in answer to question 1.
21. Only in keeping children affected and infected out of the public schools when known.

EAST ROCKFORD.

REPLIES BY H. L. SOOK, M. D.

1 and 2. Only an epidemic of good health.
3. Decidedly less.
6. A few (say half a dozen) mild cases.
7. Not confined to any particular month.
8. Swampy locations.
9. Six.
10. Two quite mild, four malignant, cases.
12. Good.
13. No.
14. Not any.
15. No, excepting burning sugar.
16. Yes.
17. Yes (one of malignant cases died).
19. Quite extensive.
20. February, March and April.
21. None excepting family precaution.

GLENVILLE.

REPLIES BY IRWIN C. CARLISLE, M. D.

1. Yes.
2. Measles epidemic, but mild in character.
3. About the same.
6. One-half dozen cases.
7. October.
8. Damp, foggy weather.
14. Four cases.
15. Yes.
16. No.
17. No.
18. All instances.
19. Epidemic.
20. March and April.
21. Yes.

INDEPENDENCE.

REPLIES BY I. N. NOLAND, M. D.

1. There has not.
3. Perhaps a trifle more.
4. Lung diseases.
6. Less than before.
7. November and December, 1886.
9. Eight.
10. Malignant.
12. Poor.
13. Yes; two were contracted by contagion being carried in their parents' clothing.
14. But two cases.
15. Not satisfactorily.
16. In some cases they did.
17. In two cases of diphtheria.
18. The disease did not spread where disinfection and isolation were practiced.
19. There were about twenty cases.
20. During April and May.
21. Isolation as much as possible.

NOTTINGHAM.

REPLIES BY W. O. JENKS, M. D.

1. Yes.
2. Measles and mumps.
3. Less.
4. Measles and mumps.
6. Not extensive.
7. September and October.
14. Very slightly.
15. No.
16. Yes.
18. No opportunity to observe this year.
19. Quite general.
20. April and May.
21. None.

Remarks.—Typhoid fever developed after the rains came that broke our prolonged drouth. Not one case of diphtheria appeared in my neighborhood, but five miles southwest of here it prevailed quite extensively, and was severe, and in some cases malignant. It prevailed among people who send milk to and draw manure from Cleveland.

ROCKY RIVER.

REPLIES BY J. F. HOBSON, M. D.

1. No.
3. Less.
4. None.
6. One case.
7. August.
9. Ten to twelve.
10. Mild.
11. None.
12. Ordinary.
13. No.
14. One case.
15. No.
16. In some cases—generally not.
19. None.

DARKE COUNTY.

ANSONIA.

REPLIES BY H. A. SNORF, M. D.

1. No.
3. Less, if any, change.
4. Cholera morbus, cholera infantum.
5. Indiscretion in diet and over-drinking of water in hot weather.
6. Typhoid occurred as an endemic last September, '86. It was most violent and malignant in type. We have had fewer cases, and of milder type, this fall—'87.
7. September, October.
8. Bad water supply. Our town is in bad hygienic condition; bad privy vaults and shallow wells.
9. Very few cases and of mild type.
11. Communicated in school in the beginning; origin not known.
12. Good.
14. One—recovery.
15. In all cases.
16. Positively no; no children were allowed in the house until thoroughly disinfected.
17. No.
18. In every single case of scarlet fever.
19. We had measles in three families.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

DARKE COUNTY—Continued.

20. March, April.
21. Yes.

We had one case of small-pox. As soon as the diagnosis was made the patient was provided with a tent and nurse and medical attendant, and put out in a grove isolated from every one else. No further spread of the disease occurred.

CASTINE.

REPLIES BY O. B. LONGENECKER, M. D.

In reply to your request of October 31st, I answer the questions in their order:

1. Epidemic of diphtheria.
2. Eight cases; two died; remainder, mild.
3. Less than previous years.
4. Bronchitis during February and March; dysentery and diarrhœal troubles in July and August.
5. Dysentery and diarrhœa to excessive hot and dry weather, with bad water from low wells, and a good crop of grapes and other fruits, children eating a large amount of them in the hot weather.
6. None.
9. Eight cases.
10. Mild.
11. First case appeared to have taken it at county fair, three weeks before, at least, there was no other known or possible exposure. Second case took it from first case by playing with her one-half day while in initial stage. Two other cases were at school with first case two days before she complained at all, and said to be perfectly well. They were in same school-room and played with her, and no other known exposure. It seems to make it probable that the disease can be transmitted in initial stage, or perhaps before it can be said to begin. Also, from first case it seems that it is possible for it to be in the system for three weeks, and then break out; but, of course, I cannot say certainly, but it is probable.
12. Usually reasonably good.
14. Two cases, three miles away in country.
15. In my cases of diphtheria isolation and perfect disinfection.
16. Schools closed on account of diphtheria, and patients and family kept close.
17. In two cases of diphtheria, in charge of Dr. Hamilton, of Ithica, Darke county.
18. They appeared to be successful, as it did not go to other members of any family.
19. None.

It may be of interest to say that I had two cases of puerperal fever, while attending a case of erysipelas, notwithstanding antiseptic and disinfectant precautions. The eating of grapes, seeds, and rind by children seemed to cause a large amount of inflammatory disease of intestinal canal, especially during the very warm weather.

FORT JEFFERSON.

REPLIES BY DANIEL T. BLACK, M. D.

1. None.
3. About the same.
4. Typhoid and kindred diseases.
5. No.
6. Considerable.
7. July, August, and September.
8. Low water.
9. None.
12. Ordinary.
13. None.
14. None.
19. Isolated cases.
20. March and April.
21. Yes.

GETTYSBURG.

REPLIES BY C. F. RYAN, M. D.

1. No.
3. Same as previous years.
4. Typhoid fever and whooping-cough.
5. Special cause in typhoid fever was extreme drouth and excessive heat.
6. Was very prevalent.
7. August and September.
8. Bad water.
9. None.
14. But few cases.
15. As far as possible.
16. No.
17. No deaths.
19. Not very extensive.
20. April.

A few cases of dysentery.

GORDON.

REPLIES BY J. SHUFF, M. D.

1. Measles.
3. Less.
6. None.
9. None.
14. None.
19. Ten cases.
20. April.
21. Yes.

HILL GROVE.

REPLIES BY E. W. LONGANECKER, M.D.

1. No epidemic of any kind has prevailed in this town or locality during the year.
3. Amount of sickness has been less than the preceding year.
4. During the hot mouths infantile diarrhœa was more prevalent than usual.
6. Typhoid fever occurred only sporadically, numbering only a few cases during the year.
9. There were six mild cases of diphtheria during the year with numerous cases of acute tonsilitis of varying types of severity.
11. The mode of communication could invariably be traced to personal contact with the disease.
12. Sanitary condition of houses was generally good.
13. As to conclusive proof of contagiousness of diphtheria, I was able to trace each case to personal contact with persons having the disease. For instance, a family consisting of father, mother and two little boys, aged three and six years, respectively. Father, mother and youngest boy visited a relative (a child of four years old) with diphtheria two days before the death of the child. In three days after the visit, the little boy who accompanied his parents was taken down with diphtheria, and in seven days after the beginning of his sickness, the mother and his six-year old brother almost simultaneously were taken with chill, high fever, membrane on tonsils and induration of cervical glands, the disease lasting about eight days. No other children were allowed admittance to the above cases, hence, no further infection therefrom.
14. Only three cases of scarlet fever in my practice.
15. Isolation practiced in one case of scarlet fever with no further infection. Disinfection (cleanliness always enjoined) not practiced because, as a rule, in country practice, the entire family and neighborhood to a great extent are exposed to the disease before the phy-

DARKE COUNTY—Continued.

sician is called, and before the nature of the disease is made known.

16. Children in contact with the above contagious disease were not allowed to attend school or public places when known.

17. No.

18. Answered in 15 and 13.

Measles occurred only in two families, in one eight cases and in the other four cases. In both families it occurred in February. The disease having occurred in the country at some distance from other families, there was no spread of the disease. The drouth which this community is seriously affected with, so far as the failing of water in wells is concerned, has had no perceptible influence on the general health. The conditions of our surroundings has been favorable to the health of our locality during the entire year, hence the amount of sickness for the year in question was much less than for previous years.

HOLLANSBURGH.

REPLIES BY A. W. MEEK, M.D.

An epidemic of measles prevailed during the months of February and March which visited almost every family in town and country, breaking up our public schools.

We took no precaution whatever in trying to arrest its spread until it was too late to do much. Out of one hundred and twenty-five cases of my own observation there was one death.

We have but very little enteric fever in our locality. I have been here, or in this locality, some thirteen years, and have only met with four cases of typhoid fever, and but little malarial fever. Our farmers are energetic, and keep the land well-drained. The general sickness is getting less and less each year, owing, I think, to the precautions taken.

NEW MADISON.

REPLIES BY E. A. HECKER, M.D.

1. No.
3. Less than previous years.
4. None.
6. Very slight; only four cases occurred in this locality.
7. August and September.
8. Not ascertainable.
9. None.
14. None.
19. None.

VERSAILLES.

REPLIES BY JOHN E. FACKLER, M. D.

The general health of this town and vicinity has been good during the last year. Malarial diseases have almost entirely disappeared from this community, which is attributed to thorough drainage and a more general cultivation of the soil.

Typhoid fever has prevailed to an unusual extent, both in town and surrounding country, the number of cases being about fifty, with a death rate of 14 per cent. The most prolific source or cause of the fever, no doubt, has been impure drinking water. In consequence of the excessive and long continued drouth, the water in wells became very low, and many entirely failed.

The greatest number of cases occurred in the latter part of the month of August and in September. The general conditions that seemed to favor its development were hot days, with comparatively cold nights; conditions that gave rise to torpidity of system, a tendency to congestions, with lowered vitality. No cases of diphtheria or scarlet fever have occurred.

Measles, during the months of March and April, prevailed to a very limited extent in a certain neighborhood. The entire number of cases, not exceeding twenty-five, none of which were fatal.

WEBSTER.

REPLIES BY WM. MINSER, M. D.

1. No.
3. Average amount.
4. Typhoid fever.
5. Low water.
6. Almost epidemic.
7. September and October.
8. Bad water.
9. None.
14. None.
19. None.

Remarks.—Typhoid fever was the most prevailing disease by all odds we have had this fall. It was nearly if not quite epidemic, but only a few cases of the malignant type.

WOODINGTON.

REPLIES BY J. L. HUSTED, M. D.

In November, 1886, I had two cases of lung trouble, styled consumption. Last winter I had several cases of lung fever. In April there was an epidemic, with symptoms like first stage of cholera; no deaths. In May I had one case of typhoid fever, which recovered. In April had one case of scarlet fever. July and August I had twelve cases of cholera infantum—one death. In September had two cases of typhoid fever. In October had one case of scarlet fever, and one case of diphtheria.

It was healthier during the past year than it has been for eleven years.

YORKSHIRE.

REPLIES BY J. F. ADAMS, M. D.

1. No.
3. Less.
4. Malarial and typho-malarial fevers.
5. Yes; to bad water.
6. A few cases.
7. October and November.
9. None.
14. None.

DEFIANCE COUNTY.

FARMER.

REPLIES BY B. E. MILLER, M. D.

In reply to list of questions, will report we had a very extensive epidemic of measles during the past winter and spring, very virulent in character, and with frequent complications of bronchitis and pneumonia, but no deaths occurred within our vicinity from the disease. The epidemic spread to a radius of ten miles from our village.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 34 and 35 of this Report.

DEFIANCE COUNTY—Continued.

The amount of sickness and deaths was greater than in the previous year, and mostly confined to aged people with chronic diseases, such as consumption, dropsy and apoplexy. There were no cases of typhoid fever or diphtheria during the year; a few cases of scarlet fever, very mild in character, occurred. Though isolation and disinfection were only practiced in one case, the disease did not spread to other families in the neighborhood. Children did not attend school from these families; sanitary conditions were bad in all cases; measles was most prevalent in the months of March, April and May; no precautions were taken to limit its spread, and nearly all ages, from the infant a week old to sixty years of age, were victims to the disease.

DELAWARE COUNTY.

ASHLEY.

REPLIES BY H. N. COOMER, M. D.

1. There has been no epidemic in this locality within period mentioned.
2. The amount of sickness has been less. It is hoped that a thorough system of subsoil drainage has contributed to lessen the amount of sickness in this locality.
6. There have been a few cases of typhoid fever.
7. Occurring in September and October, 1887; rather malignant.
8. No special cause apparent, except extreme drouth, the water in the wells holding in solution an unusual quantity of earthy products.
9. A few cases of diphtheria in '86-7.
10. The general character mild.
11. Origin unknown.
12. Sanitary condition of houses in which it occurred good.
13. No positive proof of contagiousness, but regarded with suspicion, and exposure avoided.
15. But little regard paid to isolation and disinfection.
16. Sometimes regardless of advice, but prohibited if known by school board.
17. Typhoid fever only.
18. These measures not sufficiently tested to determine.
19. Small extent.
21. Not known.

CONSTANTIA.

REPLIES BY A W. DUMM, M. D.

1. There has been no epidemic of any kind during the year ending October 31, 1887.
3. The amount of sickness was less than for several years previous.

No disease was more prevalent than usual.

No special causes of disease apparent.

Typhoid fever—cases were scarce; only three or four cases in this vicinity that I know of. They occurred in the month of September—the drouth causing the water in the wells of the neighborhood to be low and scarce, and perhaps the bad sanitary condition of the privies.

We had no cases of diphtheria.

We had no scarlet fever.

We had five or six cases of measles in the month of May. Strict precautions were enforced and the disease was limited to two families.

We have had very little sickness of any kind in our place and vicinity the last year. Our prevalent troubles are malarial diseases, etc.

GALENA.

REPLIES BY H. A. FURNISS, M. D.

1. No.
3. Slightly greater.
4. Typhoid and malarial fever.
5. No.
6. More than usual.
7. September and October.
8. I know of none.
9. None.
14. None, as far as known.
19. Only know of two cases.
21. No.

RADNOR.

REPLIES BY T. H. GORSLENE, M. D.

Not one single case of scarlet fever, measles or diphtheria in the last year in this locality, nor an epidemic of any kind. Some typhoid, but principally malarial troubles; unusually healthy.

SUNBURY.

REPLIES BY A. P. TAYLOR, M. D., H. O.

1. No.
3. About the same as previous years.
6. About twenty cases.
7. November, 1886; October, 1887.
8. Impure water and filth.
9. Two.
10. Severe.
11. Impure water.
12. Very poor.
13. No.
14. None.
15. Yes.
16. No.
18. The two cases of diphtheria were in separate families and all children separated from them.
19. None.

ERIE COUNTY.

MILAN.

REPLIES BY N. J. ESCH, M. D.

To my knowledge there has not been a case of either diphtheria, scarlet, or typhoid fever about here this year. Some tonsillitis and some measles about six miles from here, in Oxford township. During the summer some bowel troubles.

VERMILLION.

REPLIES BY F. C. M'CONNELLY, M. D.

1. No.
3. Less.
4. None.
6. One case.
7. October.
9. Five.

ERIE COUNTY—Continued.

10. Mild.
11. Imported from Cleveland, Ohio.
12. Good.
13. Lady brought her child from Cleveland, who had been having the disease, and stopped at her sister's house, the latter and four of her children contracted it.
14. None.
15. Yes.
16. No.
17. None died.
18. But one case after disinfectants were used.
19. None.

Our town has been very healthy, which I attribute to the use of cistern water by our people. In neighboring towns, where well water was used, there has been an undue amount of typhoid fever, or something nearly allied to it. The cases of diphtheria reported there could be due to no other cause but contagion. A child who had been sick with the disease was brought into a family who were previously healthy, and the whole family had the disease except the father and one child (five in all). No other cases in the towns or vicinity.

FAIRFIELD COUNTY.

CLEARPORT.

REPLIES BY W. S. RUTTER, M. D.

No epidemic of zymotic diseases has occurred in this locality for the year ending October 31, 1887. The amount of illness here was somewhat greater than for several previous years.

Dysentery and fevers of malarial origin were more than usually prevalent. I presume the prevalency of the diseases above mentioned was occasioned by the long continued drouth, the absence of rain and the low condition of the water supply.

Some isolated cases of genuine typhoid fever occurred in this vicinity, but it could not have been considered epidemic. Cases occurred principally during the months of August and September, 1887. The general conditions that seemed to favor its development were a depressed vitality, accompanied by unfavorable sanitary surroundings.

I suppose about twenty-five cases of diphtheria occurred in this locality the past year. Diphtheria was usually of a mild type, and yielded promptly to remedial measures. The majority of buildings in which the disease prevailed were lamentably lacking in favorable sanitary conditions.

I am cognizant of no cases here offering conclusive proof of its contagiousness.

We have had no cases of scarlet fever the past year.

Isolation and disinfection were practiced in all my diphtheria cases, so far as practicable. Children from houses where diphtheria occurred were not prevented from attending schools and other public places. Public funerals have never been prohibited here in cases of death from diphtheria and scarlet fever.

We have had very few cases of measles the past year. Such cases occurred during March. No particular precautions were taken to prevent its spread.

The good health of this locality has, in my opinion, been largely due to the simple, abstemious habits of the farming and laboring population, pure air and excellent water, and a hilly, rolling country, favoring perfect drainage.

LANCASTER.

REPLIES BY G. A. HARMAN, M. D.

1. Has not.
3. Less.
4. Bowel troubles in infants.
5. Dry, hot weather.
6. Limited; had three cases.
7. February.
8. Contagion.
10. Mild.
11. My observation has led me to believe that diphtheria is first local and then becomes constitutional. Have noticed that sometimes nearly every sore throat becomes diphtheritic. Why? I think because the germs are floating plentifully in the air, and find in the inflamed throat the proper conditions for their propagation. At other times sore throats do not become patched because the air is free from the germs. I am also inclined to believe that scarlatina anginosa is a combination of scarlet fever and diphtheria; and in an epidemic of scarlatina the anginosa variety does or does not prevail, as the air is or is not impregnated with the diphtheritic germs. The profession has ceased to believe that only one disease can affect the body at the same time. We know that in malarious districts malaria complicates everything. I do not see why scarlatina and diphtheria can not be combined when the one produces the very conditions most favorable to the production of the other. The acceptance of this combination will settle all disputes as to their identity or non-identity.
12. Fair.
14. Limited; three cases in one family.
15. As to other children out of family, yes.
16. No.
17. Had no deaths.
19. Limited; a few isolated cases.
21. Yes.

LITHOPOLIS.

REPLIES BY GEORGE S. COURTRIGHT, M. D.

1. No.
3. Less.
7. August and September.
8. Sporadic.
9. Three to six.
10. Amenable to treatment.
12. Good.
13. No.
14. None.
16. No.
17. No deaths.
19. None.

BALTIMORE.

REPLIES BY H. I. HUMMEL, M. D.

1. No.
3. Less.
4. Malarial.
5. To dry season and heat.
6. But one case.
7. October.
9. Two hundred cases.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

FAIRFIELD COUNTY—Continued.

10. Mild, with few exceptions.
12. Good.
13. No.
14. Not very extensive.
15. Yes.
16. Yes.
17. No deaths.
19. None.

It has been unusually healthy in this neighborhood throughout the year.

SUGAR GROVE.

REPLIES BY S. RENSHAW, M. D.

In answer to questions regarding certain acute infectious diseases contained in your circular just received, I am glad to say that thus far this locality has been exempt from any of those enumerated in your printed list, viz: typhoid fever, scarlet fever, diphtheria and measles. Even malaria, which, like the poor, is always with us, has been less frequent than in some former years.

It will be a pleasure to me to render any service to your board that lies within my power, in aid of the great work which it is doing.

FULTON COUNTY.

ARCHBOLD.

REPLIES BY A. J. MURBACH, M.D.

1. Yes.
2. Diphtheria and typhoid fever.
3. Greater.
4. Diphtheria, typhoid and dysentery.
5. Yes; low state of wells, drouth, bad water.
6. One hundred cases.
7. September and October.
9. One hundred cases.
10. Severe, high temperature and often complicated.
11. Contagion in some cases.
12. Some good and some bad.
13. No.
14. Only a few cases.
15. Yes, as far as practicable.
16. No.
17. Yes, with restriction.
18. Successful to a great extent.
19. Fifty cases.
20. March and April.
21. No.

DELTA.

REPLIES BY S. P. BISHOP, M.D.

1. No.
3. About the same.
4. Typhoid fever and tonsilitis.
5. Low water in surface wells with consequent concentrated impurities cause of typhoid.
6. About ten cases.
7. In October.
8. Extreme drouth.
9. Not more than two or three.
10. Mild.
12. Fair.
14. Fifteen or twenty cases.
15. As far as practicable.
16. A few attended meetings.
17. In one instance.
19. No measles.

FAYETTE.

REPLIES BY C. B. HERRICK, M.D.

1. No.
3. Not greater.
6. Occassionally a mild case.
9. Some twenty cases; mild form.
11. I consider it endemic.
12. Nothing special.
13. No; I deem it non-contagious.
14. None.
15. No.
16. To some extent.
17. No.
18. Nothing satisfactory.
19. No measles.

SWANTON.

REPLIES BY L. A. BASSETT, M.D.

1. No.
3. About the same.
6. Limited.
7. October.
9. Ten or twelve.
10. Mild form.
12. Fair.
13. No.
14. Very little, if any.
15. Very little.
16. No.
17. Yes
19. None.

FAYETTE COUNTY.

MILLEDGEVILLE.

REPLIES BY J. T. MASON, M.D.

1. Yes.
2. Typhoid fever, diphtheria and malaria.
3. Greater.
4. Diphtheria and typhoid fever.
5. Low water and parched vegetation.
6. Sixty cases.
7. August and September.
8. Water.
9. One hundred and twenty.
12. Both good and bad.
13. Yes; by direct contagion.
14. None.
15. Not altogether.
16. Yes.
17. Yes.
19. None.

Have six new cases of diphtheria to-day in the country.

STAUNTON.

REPLIES BY S. H. M'AFEE, M.D.

1. None.
3. Less.
4. Malaria.
5. No special cause.
6. Not a case.
9. About seven.
10. Rather mild.
11. Can't say.
12. Good.
13. None.
14. Had none.
15. Not in all.
16. No.
17. No deaths.
19. Had none.

The health of my locality is very good, and has been for the last eighteen months.

FRANKLIN COUNTY.

ALTON.

REPLIES BY L. WOODRUFF, M. D.

1. No.
3. Same.
4. Malarial.
9. None.
15. Yes.
16. No.
17. No; private.
18. Very efficient.

Replying to such questions as are not answered with monosyllables, I have to say:

6. I had five cases in my own practice, and about as many more were treated by other physicians.

7. All, or nearly all, occurred in August, September, and October.

8. I think all can be traced to impurities in drinking water. The wells were low, and in many instances, not far removed from cesspools.

14. Two cases in one family, friends from Clarke county bringing with them a child just recovered from scarlet fever. Visited them on the 25th of December, and on the 28th two children were seized almost simultaneously. One recovered; the other died on the 22d day of uraemia, there being complete suppression of urine for five days.

15. Condy's solution of pot. per mang. was used to disinfect discharges, and placed in shallow vessels in the room. The house was commodious, and three other children were immediately placed and kept in another room as remote as possible from the sick room. Nurses were strictly forbidden to enter any other than the room in which their duties required them. The house and all articles of clothing and bedding were thoroughly fumigated with sulphur. No other cases occurred in the community.

CANAL WINCHESTER.

REPLIES BY L. W. BEERY, M. D.

1. Yes; roseola.
2. Quite prevalent; no very serious cases.
3. About the same as previous years.
4. Intermittent and remittent fevers; slightly more.
5. No.
6. None.
9. None.
14. None.
19. None.

CENTRAL COLLEGE.

REPLIES BY A. L. M'LEOD, M. D.

1. No.
3. Less.
6. None.
9. None.
14. Not one case.
19. None.

Very healthy here.

COLUMBUS.

REPLIES BY F. GUNSAULUS, M. D., H. O.

1. No.
3. Less.
4. Cholera infantum; July, 1887.
5. Poor milk; preventable to a degree.
6. Thirty deaths; number of cases not reported.
7. September and November.
9. Diphtheria, 173 (reported) deaths.
10. Mild.
12. Majority of cases not good.
14. Scarlet fever, 104 (reported).
16. No.
17. No.
18. Did not prevail to any large extent in any particular locality.
19. In the spring months.
21. Not allowed to attend school.

All cases of diphtheria and scarlet fever physicians are required to report immediately to health officer, and the houses are placarded, and children not allowed to attend school until permission is granted from the health office. Such permission is granted on receipt of convalescent certificate from attending physician.

GALLOWAY.

REPLIES BY W. L. PINKERTON, M. D.

1. No.
3. Less.
6. More than for four years past.
7. September.
8. Scarcity of water.
9. None.
14. None.
19. No cases.

Typhoid occurred in families where the water in the wells was low; but six cases in all. But little bowel trouble among children. General health of this community has been good all the year.

HILLIARD.

REPLIES BY G. F. JEWETT, M.D.

1. No.
3. About the same.
6. I had eight cases.
7. Three cases in January and February, and three also in October.
9. I had nine cases.
10. Generally mild.
12. Good, comparatively.
13. None of these offered conclusive proof of contagiousness at the time of treatment. I have no doubt they would at an earlier period. In two families were found the same conditions, viz.: one with the disease fully developed, and two others with it, apparently just coming on.
14. None.
15. No disinfection and no isolation.
16. No.
17. No deaths.
18. In no case did disease (diphtheria) spread out of the family.

HARRISBURGH.

REPLIES BY G. W. HELMICK, M.D.

1. No.
3. About the same.
4. Typhoid and lung fevers.
5. No special cause.
6. Small extent.
7. January and February.
8. Climatic.
9. Fifteen.
10. Mild.
12. Good.
13. No.
14. None.
15. Yes.
16. No.
17. No.
19. No.
21. Yes; isolation.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

FRANKLIN COUNTY—Continued.

REYNOLDSBURG.

REPLIES BY JAMES B. DYSART, M.D.

1. No.
3. About the same.
4. None.
6. Six cases.
7. August, September and October.
9. None.
19. Very few, if any cases.
20. Spring months.

There are three physicians here besides myself.

I have only stated the occurence of diseases in my own practice, and so far as they have come to my knowledge in the practices of the others.

In my own practice the occurrence of typhoid, typho-malarial, and malarial fevers seemed to me to depend upon the condition of Black Lick Creek. All the cases of the above fevers in this immediate neighborhood being almost or quite within a stone's throw of the creek, into which empties a smaller run passing through the village. This latter water-course is a receptacle for slaughter-house offal, stable manure, privy filth, and all manner of animal and vegetable refuse.

There has nòt, to my knowledge, been a case of *genuine* diphtheria in this neighborhood since I practiced here, nearly six years. I know of no cases of scarlet fever here since the winter and spring of 1885, when there were several cases. In most of them the eruption was slight but the sequelæ were well defined. There was one death out of six or eight cases.

SHADEVILLE.

REPLIES BY W. H. BLAKE, M.D.

1. No.
3. More during July, August, September and October.
4. Malarial.
6. Five cases.
7. September.
9. Six.
10. None proving fatal.
12. Average.
13. No.
14. In two families, and all the children in the two families; total six children.
15. Yes.
16. No.
17. No deaths.
18. Limited to the two families, and the one family was not exposed to the other, and not living near.
19. None.

The water of the Scioto river is very bad here from the sewage of Columbus and low water, and think there ought to be some way of disposing of the sewage other than running it down the river, endangering us south of the city.

GALLIA COUNTY.

ADDISON.

REPLIES BY CLAYTON C. BARTON, M. D.

1. No.
3. Greater.
4. Those of a malarial character; flux, intermittent and typhoid fevers—especially the latter.
5. The fevers and fluxes were mostly on the borders of Campaign Creek, a large, deep creek, with mud and rock bottom, and which has consisted of a series of stagnant pools for the past four or five months. I attribute most of the sickness I have had to contend with this summer and fall to the condition of said creek.
6. There were about eleven cases that I am justified in calling typhoid.
7. August, 6; September, 3; October, 2.
8. The cases were west and south of aforementioned creek, and the prevailing winds were from the northeast, carrying the vapors from said creek to the patients.
9. Some two dozen of mild cases.
10. It was mild, except in one instance; the patient took a relapse, the exudation reappeared in its windpipe, and it died.
11. There were five cases near the confluence of two creeks, where the adjacent bottoms were damp and fogs were prevalent; in fact, all the diphtheritic cases were close to the low bottom grounds.
12. The houses were mostly log and old; a few were brick, on the river bottom, but nearly all the residences were where the ground is low, damp, and malarial conditions prevail.
13. A mother had it, and I told her that her nursing child would likely contract it from her, and in seven or eight days afterward the child had it. I can't say that any of my cases afforded any proof of its contagiousness.
14. Only one case this past summer, and it was mild.
15. No.
16. We had no school here in July, August, and forepart of September in the country, but no isolation was practiced.
17. In the one fatal case of diphtheria a public funeral was held, but mothers with children did not attend.
18. Can't say.
19. Last spring I had a number of cases, some twenty in this vicinity, and I doctored some half dozen cases in Cheshire, five miles north of here. The latter cases had pneumonia complications.
20. In December and January at Cheshire, and in January, February and March in this vicinity.
21. I believe the schools were closed in a few instances.

CHESHIRE.

REPLIES BY J. H. PAKE, M. D.

1. Yes.
2. Measles—all mild, except a very few cases.
3. Less.
4. None.
6. Only five cases.
7. September.
8. Bad water.
9. None.
14. No cases.
19. One hundred and ten or one hundred and fifteen cases.
20. January, February and March.
21. No.

MERCERVILLE.

REPLIES BY S. W. WILLIAMS, M. D.

1. Measles and whooping-cough.
2. Measles during the early spring, followed by whooping-cough.
3. Rather less than usual.
6. But few cases.
9. None.
14. None.

GALLIA COUNTY—Continued.

19. Prevailed extensively.
20. March and April.

Measles and whooping-cough are the only diseases which have prevailed in this part of this county during the past year. During March and April they were very prevalent, especially along the borders of the river. The health of this locality has been unusally good during the summer and fall. There were but few cases of typhoid fever in this locality, and most of them were imported from towns on the river below here. The continued drouth seems to have had no bad effect upon the health, although many wells and springs were very low.

THURMAN.

REPLIES BY J. S. THOMAS, M. D.

1. No.
3. About the same.
4. Typhoid.
6. Ten or twelve cases.
7. July and August.
9. Four.
13. No.
14. None.
19. No.

GEAUGA COUNTY.

BURTON.

REPLIES BY H. W. QUIRK, M. D.

1. No.
3. The amount of sickness in the vicinity for the past year was about the same as for previous years.
4. Jaundice and liver complaints in general.
5. Meteorological influences. The wells are very low, and the water is the probable cause. No rain to fill springs or wells.
6. A few cases of typhoid fever occurred in this locality.
7. September and October.
9. About ten, probably.
10. Mild in some; malignant in others.
11. I attributed the cause to cess-pools about the residences, and ordered them removed.
12. Some were good; some poor.
13. It was undoubtedly contagious, as five in one family suffered from the disease; one death; also a case occurred directly across the street in a child which had had free intercourse at the former place of infection; also a relative who had been visiting at the infected house, but who had returned to its home some two miles distant, was affected.
14. A few isolated cases.
15. Yes; as far as possible.
16. The children from these families were not permitted to attend school or other public places, nor allowed to have free intercourse with other children not exposed to the contagion.
17. Public funerals were held.
18. I think these restrictions of isolation prevented, to quite a measure, the spread of these diseases.
19. There were only a few cases of measles during the year ending October 31, 1887; but since that time a general epidemic has prevailed; also whooping-cough and chicken-pox.

EAST CLARIDON.

REPLIES BY C. T. W. SEIDEL, M. D.

1. Yes
3. Less.
4. Bronchitis.
5. No.
6. Five cases.
7. August and September.
8. Malarial enfiœnas.
9. Two.
10. Malignant.
12. Good.
13. No.
15. Yes.
16. No.
17. Yes.
19. Many cases.
20. December, February, and March.
21. No.

HAMPDEN.

REPLIES BY L. D. WEST, M. D.

2. Parotitis; generally in a mild form.
3. Less.
4. Parotitis.
5. No.
6. None.
9. No.
14. None.
19. None.

GREENE COUNTY.

ALPHA.

REPLIES BY JAMES A. M'CLURE, M. D.

1. Yes.
2. Diphtheria and dysentery.
3. Greater.
4. The two above named.
5. They both commenced in the vicinity of a distillery and cattle pens; think the cause removable.
6. None.
9. Twelve.
10. Malignant and endemic.
11. None known.
12. Bad.
13. Could not say conclusively.
15. As nearly as could be.
16. No.
17. No.
18. Occurred only in a small territory.

The flux endemic covered the same ground as did the diphtheria.

JAMESTOWN.

REPLIES BY J. M. TORRENCE, M. D.

1. None whatever.
3. Less.
4. None.
6. One-quarter to former year.
7. March and September.
8. Impure water.
9. Twelve.
10. Mild.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

GREENE COUNTY—Continued

12. Bad ventilation.
13. None.
14. None.
15. Yes.
16. No.
17. Yes.
19. None.

This locality is healthier than for two years.

NEW JASPER.

REPLIES BY DAVID E. SPAHR, M. D.

1. No.
3. Less.
4. None; remarkably healthy.
6. None.
9. None.
14. None.
19. None.

OSBORN.

REPLIES BY R. C. HOOVER, JR., M. D.

1, 2, 19, 20 and 21. During the months of January and February measles prevailed in a portion of this locality to the extent of an epidemic. It assumed a mild form, many families not calling a physician. But one death occurred from sequalæ, that of a child one year old. One interesting feature of the epidemic observed was its well-defined border. Osborn is situated on the east side of Mad River, and, while scarcely a family on the west side escaped a visitation of the epidemic, the east side was entirely exempt. The disease had not prevailed in this town for five or six years. No precautions were taken to limit the spread of the disease other than closing the schools.

3, 4 and 5. The amount of sickness, excepting measles, during the year was about the same as previous years. There was a noticeable increase of malarial diseases during the months of August and September.

6, 7 and 8. But two cases of typhoid fever occurred during the year. One occurred in June, the other in September. These were typical cases. One was an imported case, and nothing could be learned of the general conditions giving rise to it; the other case was most probably due to exposure, malaria, and excessive alimentation.

9, 10, 11, 12 and 13. Diphtheria visited but one family during the year. Three of four children were attacked simultaneously. In one it assumed a severe croupous form. Isolation was practiced as fully as possible. The sanitary condition of the house was bad. No case of scarlet fever occurred during the year

GUERNSEY COUNTY.

ANTRIM.

REPLIES BY B. F. COEN, M. D.

1. No.
3. Less.
6. One case.
7. October.
9. None.
14. None.
19. None.

There has been no deaths in this locality in the last year except a few very old people and a few cases of consumption.

CUMBERLAND.

REPLIES BY B. A. SHOUSE, M. D.

1. No.
3. Less.
6. Five or six cases.
7. September, October and November.
8. Not known.
9. None.
14. Not a case
19. Not a case.

FAIRVIEW.

REPLIES BY L. H. GRIMES, M. D.

1. No.
3. Less.
5. All the cases recovered.
6. Six cases.
7. July.
8. Malaria.
9. None.
14. No cases.
19. No cases.

KIMBOLTON.

REPLIES BY D. L. CLARK, M. D.

1. Yes.
2. Scarlet fever—a malignant form—fatal to two to three-years-old children.
3. Rather greater.
4. Scarlet fever and remittent fever.
5. No.
6. Limited.
7. September and October.
8. Very hot and dry weather.
9. None.
14. Fifteen or twenty cases.
15. Not always.
16. No.
17. A few were.
18. Very successful.
19. In one or two families.
20. Autumn of 1887.
29. Yes.

MILNERSVILLE.

REPLIES BY W. B. ROSAMOND, M. D.

1. Yes.
2. Scarlet fever.
3. Greater.
4. Scarlet fever, diphtheria.
6. There were but four cases.
7. September and October.
8. Drouth.
9. Twelve.
10. Majority mild cases.
11. Can not.
12. Bad.
13. Yes; in one family three had it.
14. Over one hundred cases.
15. No—yes—families were isolated.
16. No.
17. No.
18. In all cases where practicable.
19. Only three cases.
20. August.
21. Yes.

QUAKER CITY.

REPLIES BY T. J. ROMANS, M.D.

In answer to questions, would say, no epidemics of any kind in the vicinity the past year, until the month of October; during that month a mild type of malarial fever (so-called) prevailed to a considerable extent, with slight chills, prostration, headache, no appetite, sometimes thirst but mostly not; no typhoid temperature; some cases had hemmorrhage of the bowels. During this

GUERNSEY COUNTY—Continued.

month there was some rheumatism, and a noticable pre-disposition to carbuncle and many common boils. More neuralgia than ordinary.

SENECAVILLE.

REPLIES BY A. R. CAIN, M.D.

1. No epidemic.

3. About the same as previous years. Very few deaths from acute diseases have occurred in our locality for the past year.

6. Our locality is almost entirely exempt from typhoid fever. In twelve years of practice in this place I have known but a few cases that occurred without exposure in some other community where the disease was prevailing. We attribute this immunity to the pure water which supplies town and surrounding country, and to the great natural drainage of the land.

9. Perhaps a dozen cases of diphtheria have occurred in this locality; cases generally of a mild form, except two cases in one family, where the mother, aged about forty years, and her four months' old child died. They resided on what might be termed the borders of a community where a malignant type of diphtheria was prevailing.

10. Answered in the above.

11. Also answered above.

12. The house where the two fatal cases occurred occupies a high knoll, considerably above the surrounding county, with great advantages as to drainage and pure air, supplied with water from a well in the yard.

13. The woman, a short time previous to her attack, had visited a relative in a community where the malignant type of diphtheria before mentioned was prevailing. Her disease was of a very malignant type, she only living a short time after her attack. In a few days the babe, aged four months, was attacked, and after a short illness died. There was a large family of children, and they remained in the house, but none of them had the disease. Four or five years ago a child in same family had a very bad attack of the disease and recovered, and several times since they have had mild attacks.

14. A few sporadic cases of a mild form.

15. Not to any great extent.

16. No.

17. Public funeral was held in case of woman above mentioned; quite a number of adults attending, but no children. Also, in two funerals in the village cemetery here of diphtheria cases from another community, public funerals were held.

18. The disease did not spread from families.

19. No measles.

The deaths that occurred for the year, ending October 31, 1887, in our locality, were from the following causes: Infantile convulsions 1; consumption, 4; cancer, 2; ulcer of stomach 1; paralysis, 3; diabetes, 1; heart disease, 2; diphtheria, 2.

WASHINGTON.

REPLIES BY R. H. HENRY, M.D.

1. No.

3. Less.

4. Catarrhal.

6. Not a case.

9. Not a genuine case.

14. Limited to a few cases.

19. Not a case in this locality.

The general health of our town and community for the year ending October 31, 1887, was never better within the memory of our oldest physicians. Aside from the ordinary chronic cases, common to all localities, we have had nothing more serious than catarrhal pneumonia, and no deaths from it. We had several deaths from apoplexy (cerebral). We are located on a high ridge between two streams. On the streams some of the zymotic diseases mildly prevailed. I may say we are having hard times, great stringency, and we are almost ready to exclaim, "disease where art thou gone."

HAMILTON COUNTY,

CARTHAGE.

REPLIES BY T. S. POTTER, M.D.

1. None.

3. About the same.

4. Malarial.

5. To stagnant ponds in vicinity.

6. Most all cases are typho-malarial.

9. Unknown.

10. Mild.

12. Variable.

14. Very limited.

15. To some extent.

16. Only private schools; not in public schools when it was known.

17. Yes.

18. General precautions by each family.

19. Limited.

20. March, April and May.

21. None.

In this village and the surrounding ones, in which I practice, there is no health officer, and it is only from a general observation that any data can be got. I have been in active practice all the time, and the majority of the work is slight ailments, obstetrical and the general diseases that all are called upon to treat.

The mortality rate has been the lowest in this vicinity during the past year that I have ever seen since I came here in 1867, while the population has increased four or more fold.

In any way I can assist you, I will gladly do so, as I am a strong advocate of a State board of health, and hope the time will come when you will have almost unlimited powers over the sanitary laws and condition of the State.

CINCINNATI.

REPLIES BY BYRON STANTON, M. D., H. O.

1. No severe epidemic. A few diseases have been more than usually prevalent, and might be said to have been epidemic.

2. Measles, scarlet fever, and diphtheria were more prevalent than for a few years past. Typhoid fever began to increase in October, 1887.

3. The total amount of sickness, judging from the mortality, was slightly increased.

4. The diseases above mentioned and diarrhœal affections and sunstroke.

5. Unusual prevalence of measles, scarlet fever, and diphtheria, due to epidemic influence. Diarrhœal affections to heat and drouth of July and Augugt.

6. Typhoid fever not more prevalent than usual, until in October, 1887, after which it was very prevalent.

7. For the year ending October 31st the

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

HAMILTON COUNTY—Continued.

greatest number of deaths occurred in October, when there were forty deaths.

8. Probably due to effects of intense heat and drouth in July, August, September, and October.
9. Total number of cases of diphtheria reported during year was 567; deaths, 202.
10. Not different from the usual character, except rather more fatal in the fall and winter months.
11. I cannot state.
12. No report on sanitary condition of houses.
13. But few cases under my personal observation. No report from other physicians.
14. Scarlet fever rather more than usually prevalent, but less prevalent than in 1886.
15. Isolation and disinfection enforced as far as possible by the Board of Health.
16. Children from families in which there was a contagious disease not permitted to attend school.
17. Public funerals discouraged. Church funerals prohibited.
18. I cannot state.
19. Measles very prevalent in the first eight months of the year. Almost entirely disappeared in the last three or four months.
20. November, 530 cases; December, 634 cases; January, 851 cases; February, 311 cases; March, 182 cases.
21. The same as in regard to scarlet fever and diphtheria.

CLEVES.

REPLIES BY W. C. HUGHES, M. D.

In reply to your inquiry, I would state that the population of the section under my observation is about 4,000. The only epidemic we had was measles; during the months of May, June, and July. I do not know of any deaths from that trouble; no precautions were taken to limit it. The total amount of sickness was much less than usual. If any one disease prevailed it was the so-called "*summer complaint*" of children, due, most probably, to protracted high temperature and drouth.

Typhoid fever made its appearance in September, and is supposed to have been caused by using Ohio River water, at a point fourteen miles below Cincinnati. Not more than six or eight cases; no deaths.

We have had about twelve cases of diphtheria; general character of disease was mild. Two deaths; one from croup; one from blood poisoning. Sanitary condition of houses at which cases occurred, was *very bad*. There was no conclusive proof of its contagiousness demonstrated. Children of the families *did not* attend school. Funerals were public.

We have had but one case of scarlet fever; in this instance *perfect* isolation and disinfection were practiced, with, in my judgment, success, as there were two other children in the house who escaped.

ELIZABETHTOWN.

REPLIES BY A. J. GARRISON, M. D.

1. No.
3. Less.
6. No cases.
9. None.
14. Eight cases; in very mild form.
15. Yes.
16. No.

GLENDALE.

REPLIES BY R. D. MUSSEY, M. D.

1. No.
3. Less.
6. Know of but two cases.
7. One in winter; the other in September. Both brought to Glendale. One a hostler who slept around in stables and accompanied horses.
9. About seven as far as I can ascertain. Some have been called so, but I doubt it.
10. Mild except in one case.
11. Emanations from a filthy drain pipe seemed to be the cause in two cases. But the aggravated case spoken of seemed to be directly from contagion, as it was in a mother taking care of the daughter.
12. Usually good.
13. Yes, as under No. 11.
14. Only a few.
15. In my cases, yes; can't say of others.
16. No.
17. No.
18. The few cases would suggest that precautions were of benefit.
19. Probably not more than eight.
20. November, December, January, and February.
21. Yes; and were successful, as my man had two children sick with it in November and December, and I kept it out of my house (away from five children).

It is difficult to get complete data, as some physicians will not give the information, and others not correctly. But I think that my report will be about right.

GROESBECK.

REPLIES BY R. H. MOORE, M. D.

1. None.
3. About the same.
4. Typhoid fever.
5. Impurity of water in cisterns and wells.
6. Not prevalent.
7. October for year stated; more in November and December present year.
8. Drouth and heat.
9. Always many cases.
10. Fatal to great extent.
12. Illy ventilated; badly drained.
13. No.
14. No cases.
15. Very indifferently; cannot impress the necessity on ignorant people.
16. Generally not.
17. Yes.
19. Not at all.

PLEASANT RIDGE.

REPLIES BY J. J. MARVIN, M. D.

3. Rather less.
4. Cannot say that any were.
6. 12 or 15 cases.
7. October.
8. Low water.
9. None.
14. I have had no cases.
19. I treated only a few cases.
20. April.
21. Isolation, as far as possible.

In answer to 9 I mean that I saw none. I have, during the past year, treated perhaps 20 cases of angina tonsillaris with ulcerated patches covered by gray membrane; some quite severe, but all recovered within a few days.

HAMILTON COUNTY—Continued.

PRESTON.

REPLIES BY J. H. DUNCAN, M. D.

1. Whooping-cough and diphtheria.
2. Both very light.
3. About the same.
4. Fevers, intermittent.
5. Drying up of streams.
6. None.
9. Forty.
10. Mild.
11. None known.
12. In some good, in others bad.
13. Did not.
14. None.
15. No.
16. No.
17. Yes.
19. None.

The past year intermittent fever with catarrhal complication has been the prevailing disease.

RIVERSIDE.

REPLIES BY FRANCIS KUSNICK, M. D.

1. Early in the year measles; later on diphtheritic sore throat.

2. Nearly all children from 3 months to 12 years who never had measles before. All cases generally run a very mild form.

3. Less.

4. The above two; and later, typhoid fever.

5. Being in the proximity of Cincinnati, where both diseases were very numerous, we felt the effect of it.

6. About 11 cases and 2 deaths.

7. In October.

8. The low stage of water in the cisterns; the only water in use here.

9. Had only 4 cases.

10. Mild, was the form of the first two cases; malignant, the others: first, both well; second, both died.

11. First two cases were of home origin and of easy treatment; other two resisted all treatment.

The history of those cases is as follows: A gentleman living in St. Louis lost a child from diphtheria, the disease being epidemic in that city at the time. In order to save his last child he came to Riverside at his brother's house; child was well on arriving here, but two days after the disease appeared; after 11 days the child died. Five days after that, the only daughter of the next neighbor of the gentleman where the child died, took sick also with the disease, and after 14 days died. Of the many cases of diphtheria in the village those two cases are the only fatal ones.

12. The condition of both houses was good in every way. The house where the first child died was full of children; all escaped.

13. History as above given satisfies me of the contagiousness of the sickness; both had the very same symptoms; same malignant form. Cases of our own did not show the full strength the imported did.

14. But little.

15. Yes.

16. No

17. No.

18. No other cases of malignant form appeared.

19. As epidemic.

20. January, February and March.

21. None whatever.

SPRINGDALE.

REPLIES BY GEO. B. WILMUTH, M. D.

1. Scarlet fever and diphtheria.
3. No; about the average.
4. Scarlet fever, diphtheria and typhoid.
5. Drouth, foul water and contagion.
6. Some.
7. Summer and autumn.
8. Drouth, foul wells and water.
9. Twenty cases.
10. Malignant and croupous or membranous.
12. Good.
14. Considerable; twenty-five or thirty cases.
15. In cases during sickness they were.
16. No.
17. Yes.
18. I think to a considerable extent.
19. None.

Of diphtheria I have had twenty-five or thirty cases, losing two, one in a family of seven children, all having the disease at the same time, and one of malignant diphtheria in family of three girls, all having disease, the mother also having it.

Of typhoid fever there has been a few cases. I have had but one case in my practice, a young man of 18 years; recovery good. Of the other cases I cannot say.

WYOMING.

REPLIES BY C. P. HART, M. D.

No epidemic has prevailed here since the year 1879, when scarlet fever prevailed to an alarming extent. Since then we have suffered more or less every year from sporadic cases of diphtheria. Last year it was endemic, more than a hundred cases appearing in Wyoming and vicinity. The disease was clearly traceable to defective sewerage, the sink drainage being generally allowed to escape into the open gutters. Three deaths occurred from this disease during the past year. I recommended proper drainage, which I am happy to say, has resulted in the inauguration of measures which will, I doubt not, completely rectify the evil. Although the disease was generally of the mild or non-malignant type, isolation and disinfection were generally practiced. The children belonging to families in which the disease occurred were not permitted to attend school, and in the fatal cases, which did not exceed about three per cent., the burials were private. This privacy, however, extended only to the public, and did not, as I think it always should, exclude the children of the affected families. None but adults should ever attend such funerals, and even they may be wisely restricted in number in most cases.

Typhoid fever has prevailed during the last three months to a limited extent in this neighborhood, but as most, if not all, of the cases were imported, I need add nothing to what I have said about it elsewhere.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

HANCOCK COUNTY.

ARCADIA.

REPLIES BY W. G. BRAYTON, M. D.

1. Yes.
2. Measles and very moderate.
3. Same.
4. Typhoid fever.
5. Drouth; poor water supply.
6. More than common.
7. September and October.
8. Drouth.
19. Very moderate.
20. March and April.
21. None.

CANNONSBURG.

REPLIES BY M. M. SAYLOR, M. D.

1. No.
2. About same.
4. Typhoid fever.
5. Low water level.
6. Seven cases.
7. August 3, September 4.
8. Drouth.
9. None.
14. None.
19. A few cases.
20. April.
21. No.

Cholera infantum prevailed during the months of August and July to a greater extent than at any time since my residence here. But two cases, however, proved fatal. Of the seven cases of typhoid treated by me one proved fatal. Two other cases in same family made good recovery. The water in the well was very low, being pumped dry two or three times a day. I ordered water brought from a neighbor, in whose well was plenty of water, and after this no new cases developed; in other respects the sanitary condition of the premises was above the average of farm residences in this vicinity.

McCOMB.

REPLIES BY C. C. SWITZER, M. D.

1. No.
3. Less than for sixteen years previous.
6. None.
9. None.
14. But few cases and very light.
16. No.
17. No deaths.
19. About the same as previous years.
20. April and August.
21. No special precautions.

WILLIAMSTOWN.

REPLIES BY B. D. EVANS, M.D.

2. Measles, of a severe grade.
3. Less.
4. None but measles.
6. Very few cases.
7. September and October.
8. No spread.
9. About 25 or 30.
10. Of a malignant type.
12. The best.
13. No case showed any contagion.
15. No.
16. Yes.
17. No deaths.
19. Very extensively.
20. March and April.
21. No.

HARRISON COUNTY.

FREEPORT.

REPLIES BY R. J. PUMPHREY, M.D.

1. Yes.

2. Scarlet fever, not extensive, only about ten cases; no deaths, but were very bad; was brought, (or thought to have been) into the neighborhood on clothes from a room where a child lay with the fever; was soon checked by isolation.

3. Amount of sickness about same as for previous years.

4. There were a few more cases of typhoid fever than common.

5. Cannot be attributed to any special cause; each one had a separate origin, or seemed to have.

6. To an increased extent over last year.

7. September and October.

8. Through drinking water and exposure in low lands where water had stood.

9. About eight well marked cases.

10. The fever seemed to be more marked than in former cases, often causing more alarm than the throat troubles.

11. Origin obscure; was not communicated to remainder of family except in one or two cases.

12. Sanitary condition of houses was mostly bad; seemed to be in houses where the families were filthy.

13. No.

14. Refer to No. 2.

15. Isolation from neighbors, not from the family; cleanliness.

16. No.

17. No deaths.

18. These measures were perfectly successful in limiting these cases.

19. No measles in our vacinity this year.

Our neighborhood, for several miles, is an exceptionally healthy neighborhood; some malarial fever.

HOPEDALE.

REPLIES BY JOHN D. WEST, M. D.

1. No epidemic of any kind has prevailed in our town or immediate locality.

During the latter part of August, September, and October an epidemic of typhoid fever prevailed some distance north of us, on Cross Creek. I saw some of the patients that were typical cases of typhoid fever, although some of the profession called it typho-malarial fever. The immediate cause was not not well understood. It could not be the result of stagnant water, as I saw it on high, dry, and airy locations, where the water was pure.

3. Altogether, we have a very healthy year—no prevailing disease. I have been in this place over twenty years, and I think I have not witnessed a more healthy one.

I have not seen in the range of my practice a single case of typhoid fever (the cases I referred to were outside of my field), no diphtheria, no scarlet fever, no measles during the last year.

Some cases of diphtheria were reported, but those I saw, and I think all the rest were follicular sore throat.

There was one case of cholera infantum in our village. I did not see it. It proved fatal in about twenty-four hours.

HARDIN COUNTY.

KENTON.

REPLIES BY C. H. SCHMITT, M. D.

1. None.
3. Less.
4. No one in particular.
6. A few cases.
7. September and October.
8. Don't know.
9. None.
14. None.
19. All this summer.
20. June, July, August, and September.
21. None.

There were and are yet a few cases of typhoid fever prevailing in the country; also a few in town; very few deaths from this disease this year, and not more than other years; and if empty or low wells would produce it, we all should have it, but it is as healthy now as ever.

We had a few cases of milk sickness in September—some five or six. This is a healthy county; seldom an endemic of scarlet fever or diphtheria. Not one case for years that I know of.

NEW ATHENS.

REPLIES BY WILL M. BURGESS, M. D.

1. No.
3. Greater.
4. Fever.
5. No; it was dry weather.
6. Seven or eight cases.
7. September.
8. Bad water.
9. None.
14. None this year.
19. We have had no measles.

TIPPECANOE.

REPLIES BY G. D. CUSTER, M. D.

1. Yes.
2. Typho-malarial fever.
3. Yes; greater.
4. Typho-malarial fever.
5. Yes; are removable.
6. Eighteen or twenty cases.
7. August, September, and October.
8. Filth.
9. Two cases.
10. Mild.
12. Fair.
14. Three cases.
15. Yes.
16. No.
18. Were kept close and no one permitted to see them.
20. December and January.

HENRY COUNTY.

HAMLER.

REPLIES BY C. M. THOMPSON, M. D.

1. None.
3. Less than previous years.

6. Two cases about three miles northeast of our village; they were confined to two houses adjoining. They were using surplus water from holes in the ground about four feet deep. The water came from a stagnant pond or swale not far from the premises. The use of the water was stopped as soon as discovered, and only the two persons were attacked. All discharges from patients were thoroughly mixed with chloride of lime, and house whitewashed inside after the patients got well All clothing was disinfected.

7. October.

8. Bad hygienic surroundings and the use of surface water. Privies not far from surface holes or wells.

14. One case five miles northeast of the village in an isolated locality; only child of the family; the family had the child with them on a visit to neighborhood ten miles away where they were having scarlet rash, so-called. It run a mild course; disinfection was practiced; neighbors were forbidden to go there; no school within two miles and not in session; no other cases.

The health has been unusually good the past four months in our locality.

PLEASANT BEND.

REPLIES BY J. A. BOWDLE, M. D.

I was called five miles in the country, August 9, 1887, to see three cases of typhoid fever; they were children aged four, seven and thirteen years respectively, belonging to one family; the two older children recovered in twenty-one days, the younger child died about the twenty-fifth day of his sickness; the child was given a public funeral; no cases of typhoid fever occurred in consequence to my knowledge. The sanitary conditions of house and surroundings were bad; water very bad, and everything connected with the house and surroundings was non-conducive to good health. There were other children in same family but no others took the fever. There were other cases of typhoid fever in the same neighborhood, attended by other physicians. This neighborhood is situated on a creek, high lands, with a heavy clay soil.

There has not been as much sickness in this locality during the present as in former years. Diarrhœa was more than usually present. I attribute this unusual prevalence to the very warm, dry summer that we have had. The cases of typhoid fevers mentioned were all that came under my observation, and they occurred in August and September of this year. Four cases of diphtheria occurred during the present year in this locality, three of which were slight attacks; the fourth case was more severe.

No precaution taken to prevent spreading the disease except a general wash up all round.

The sanitary conditions of the house and surroundings was very bad. An old dilapidated house, with rubbish strewn around, and weeds grown almost to the door.

No cases offered conclusive proof of the contagiousness of diphtheria.

There has not been a case of scarlet fever in this locality during the present year. Neither has there been a case of measles.

Pleasant Bend is located in a healthy district; it is a level country for from five to ten miles around, according to the direction, well drained, with a sandy loam soil, good water, generally, the most healthy location it has ever been my good fortune to be in. We have but little typhoid fever on the level, well drained soil. I believe I have had but one case of genuine typhoid fever during my five years'

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

HENRY COUNTY—Continued.

stay here, while diphtheria is more prevalent. I have met forty-three cases of diphtheria in the five years.

NAPOLEON.

REPLIES BY T. C. HUNTER, M. D.

1. No.
4. Dysentery.
5. The cause, we all think, was the extreme drouth, which has made most of the wells run dry, and rendered the water in the remainder very impure.
6. Rather more than usual; cause the same as above.
7. October; a number of cases yet on hand.
8. Answered above.
9. There was no well authenticated case of diphtheria in this locality during the time.
14. There were a very few cases during the year, and one on hand at this time.
15. Sometimes disinfectants were used in scarlet fever cases, and some times no precautions at all were taken.
16. They were; no deaths happened from any of the above named diseases.
19. There were no measles during the time

HIGHLAND COUNTY.

FAIRFAX.

REPLIES BY O. C. HOOK, M. D.

1. No.
3. About the same.
4. None
6. Small extent.
7. July and August.
8. None.
9. Five.
10. Mild.
12. Good.
13. Three cases were infected by visiting.
14. None.
15. No.
16. No.
17. Yes.
19. Great.
20. February and March.
21. Yes; all that was possible.

HILLSBORO.

REPLIES BY E. & R. F. HOLMES, M. D.

1. None.
3. About the same.
4. Malarial.
5. None.
6. Two cases.
7. September and October.
9. None.
14. No true scarlet fever.
15. Yes.
16. No.
17. Yes.
19. A great number of cases during February and March.
20. February and March.
21. None.

A few cases of diphtheria and scarlet fever reported from other localities, but think they were not fully developed cases.

LYNCHBURG.

REPLIES BY I. HOLMES, M. D.

We have had no epidemics in this locality during last year; it has been unusually healthy. We had a few cases of typhoid fever, commencing last March and lasting until last of May; confined to two families; only five cases; all recovered; caused by a pond of stagnated water near the dwelling. Four cases in this family took the same fever from another family.

In March I had two cases of diphtheria; one a mild case, the other a severe one. Was not isolated from the rest of the family. Among seven children in the family but two cases occurred. Could not tell the cause. The sanitary conditions appeared to be good around them; both cases recovered.

MOWRYSTOWN.

REPLIES BY M. F. FUNK, M. D.

1. Yes.
2. Measles; some ten or twelve cases only.
3. About the same.
6. None.
9. None.
13. None.
14. None.
19. Only eight or ten cases.
20. March and April.
21. Yes.

NEW PETERSBURG.

REPLIES BY RUFUS A. DWYER, M. D.

3. About the same except scarlatina.
4. Scarlet fever.
6. I have had four only.
7. In October.
8. Scarcity of water.
9. About one-half dozen cases.
10. Mild in form.
12. Ordinary.
14. I have had about twelve cases in the year.
15. No.
16. They were, in the locality of Petersburg.
17. No deaths from scarlet fever here.
19. Not to any extent; a few cases only.
21. No.

Only one death from typhoid fever; funeral public and largely attended. Scarlet fever, beyond a doubt, spread from families having it sending children to school. The privies at the school house are too close to the building, and are not disinfected nor contents removed. There should be an inspection of the water supply of the public schools and surroundings, and the contents of the privies should be removed at least weekly, and burned, or used on farms as fertilizer. All the typhoid fever cases here can be referred to the too close proximity of privies to wells or drinking water in the towns.

RAINSBORO.

REPLIES BY D. N. M'BRIDE, M. D.

1. Yes.
2. Measles.
3. Greater.
4. Malarial, typho-malarial and typhoid fevers.
5. To scarcity and impurity of water.
6. More than for several years past.
7. September, October and November.
8. Answered in 5.
9. But two or three.
10. Very mild.
11. None known.

HENRY COUNTY—Continued.

12. Ordinary.
13. No.
14. None.
15. No.
16. No.
17. No deaths.
19. Answered in 2.
20. From February 1st to June.
21. Schools were suspended.

SAMANTHA.

REPLIES BY F. M. THOMAS, M. D.

1. No.
3. Decidedly less, as but few cases of fever occurred.
4. None; but diarrhœa, dysentery and cholera morbus were more prevalent than any other form of disease.
6. About seven cases; much less than usual.
7. August and September.
8. I do not know, as the families in which the disease prevailed were living during those months under very much the same general conditions as in same months of previous year.
9. About six.
10. Mild.
11. Cases were all sporadic.
12. Moderately good.
13. No.
14. I had one case only, and there were no other cases within the bounds of my practice.
15. No.
16. Yes.
17. No deaths from either disease within bounds of my practice.
19. Less than a dozen cases.
20. May and June.
21. No.

HOCKING COUNTY.

CARBON HILL.

REPLIES BY C. F. APLIN, M.D.

1. None, save measles.
3. Less.
4. None.
6. But few cases.
9. Three or four.
10. Mild.
14. None.
15. No.
16. No.
19. To a wide extent.
20. December 25 to March 1.
21. None.

Measles.—The fatal cases—two, I think—were toward the close of the epidemic. All cases were more severe at this time.

NEAR LOGAN.

REPLIES BY J. RUTTER, M.D.

1. Yes.
2. Parotitis, measles and scarlatina.
3. Greater.
4. Parotitis, measles, scarlatina and malaria.
5. Malaria—to dry weather and consequent impurity of water. Scarlet fever—to people believing it to be scarlet rash, and no measures being taken to prevent its spread.
6 One case; a lady who visited her parents near Westerville, and returned with the disease in October.
9. None.
14. Saw three cases; but it was generally so mild that treatment was not called for, but am aware that it was wide spread.
15. No.
16. Yes.
17. There were no deaths.
18. In a family of five children, where there was but one bed-room, one child took the disease; thorough disinfection was used, and the disease attacked no other member of the family.
19. About all children in this vicinity who had not had the disease passed through it this year.
20. January, February, March and April.
21. No.

SOUTH PERRY.

REPLIES BY T. IRWIN, M.D.

1. Dysentery; malignant form; five or six deaths.
2. Only small extent; ten cases perhaps in area of a square mile.
3. Rather less.
4. Anginous affections.
5. Could not discover any.
6. No cases; rare disease.
9. Six, perhaps.
10. Sparodic cases; mild, and easily managed.
13. None this year; convinced it is communicable by contact with infectious matter or secretions.
14. Not a single case.
15. No; no seeming occasion in sporadic diphtheria.
16. No; in all contagious diseases, prohibited.
18. Premises too limited to base conclusions.
19. Considerable extent; used up all the raw material.
20. Spring months.
21. None whatever.

The only disease presenting anything resembling an epidemic in our immediate vicinity has been dysentery. In September, 1886, several cases of this disease occurred within a limited area, and, at the outset, was virulent and fatal—more than half attacked, dying. The territory over which it extended did not much exceed a square mile. As cold weather approached, the disease abated. This spring, however, the warm weather seemed to revive it, and three or four deaths ensued out of double this number of cases. In June, it disappeared from our vicinity altogether. The only special cause to which the disease might be dubiously attributed was the abundance of fruit, especially peaches.

In the above named epidemic of dysentery, several members of the same family were attacked,—though not all,—and as high as three deaths took place in one family.

NOTE—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

HOCKING COUNTY—Continued.

SWAN.

REPLIES BY W. R. MOORE, M. D.

In answer to your circular letter would say, that the only epidemics that have occurred in this locality within the last year are typhoid fever (or as we prefer to call it here typhe-malarial fever) and measles.

Most of the fever cases run a course of four to six weeks, and the high temperature does not yield to the use of quinine. The temperature runs higher than in typical typhoid, often reaching 104° F. Some of the cases are accompanied with diarrhœa and tympanitis; others constipated.

This epidemic set in earlier the past summer than it usually does, my first case occurring about June 1st. It is still prevalent at this writing. I am of the opinion that it is mainly due to the low water (drouth). Most cases occurred during the month of October. No deaths from this cause in this locality.

Measles prevailed as an epidemic in the months of January, February, and March, and to a very considerable extent, but few escaping who had not previously had it. It was in a mild form; but one death, and that a woman, aged seventy, who was the subject of rheumatism and organic disease of the heart.

I have not known a case of diphtheria in the past year, nor has there been any scarlet fever within the bounds of my practice.

The most common cause of death in this locality is lung disease (pneumonia and tuberculosis).

HOLMES COUNTY.

KILLBUCK.

REPLIES BY STROUSE & GUITTARD, M. D.

1. No.
3. Less.
4. None.
6. One isolated case.
7. Occurring in June.
8. Poor.
9. None.
14. None up to the present.
19. To no extent whatever.

There has been less sickness from all causes in this locality in the past year than any previous year since I commenced practicing, which now is three years.

HURON COUNTY.

EAST TOWNSEND.

REPLIES BY J. F. GRABILL, M. D.

1. Yes.
2. Measles and scarlet fever.
3. Less.
4. Measles and scarlet fever.
5. No special cause.
9. No genuine cases.
14. A few isolated cases, and very mild.
15. Not generally.
16. Not where known.
17. One death, and but few attended.
19. Prevailed generally through locality.
20. During the spring months.
21. No.

The health is very good here. I have had no typical cases of typhoid fever. We had continued fever during this and last fall. I know of no special cause, unless it is due to the drinking water, the wells being nearly and some entirely dry.

MONROEVILLE.

REPLIES BY C. L. KREIDER, M. D.

1. No.
3. Rather less.
4. None.
6. Had only two cases; imported.
7. September.
9. Five.
10. Malignant.
12. Bad.
13. Yes.
14. One case.
15. No.
16. No.
17. Yes, in three of them.
19. None.

Drouth and low water of wells had no effect on the health of this community.

Remarks.—Only five malignant cases of diphtheria, occurring in March and April; three in one house and two in another; but sore throat prevailed to an unusual extent soon after the first cases. The first case was imported from Clyde, Ohio, by a visit of a grandmother who had been attending two cases, one fatal, and the other recovering with a protracted nasal discharge. The other family was filthy and living too close to the decaying winter slops. In the first instance, one child was isolated after a weeks' exposure, until after the death of the two sick ones, and was then restored to the house, and was also soon stricken down. The sanitary condition of the house was not good, being in a beer saloon.

JACKSON COUNTY.

BERLIN X ROADS.

REPLIES BY S. W. HENRY, M.D.

1. No.
3. Less.
4. Measles.
6. Four cases.
7. September.
8. Bad drinking water.
9. None.
14. None.
19. About one hundred cases.
20. February, March and April.
21. None.

COALTON.

REPLIES BY A. C. MESSENGER, M D.

1. No.
3. Less.
4. Measles.
6. Two or three cases.
7. September.
8. Dryness.
9. Eight or ten.
10. Mild.
12. Average.
13. Yes; affected whole family of children.
14. Very few cases.

JACKSON COUNTY—Continued.

15. No.
16. No.
17. Yes.
18. Not practiced to any great extent.
19. Epidemic the year before—1886.
21. No.

This has been a remarkably healthy year in this town; hardly have any two cases of same kind, although some of them seem to have some malarial taint owing to situation of town.

WELLSTON.

REPLIES BY J. B. SPENCER, M.D.

1. There has not.
3. About the same.
4. Malarial affections.
5. Bad water, and ponds around town.
6. A few cases.
7. September and October.
8. No perceptible cause other than stated in fifth question.
9. None.
14. A few very mild cases.
15. I think not; as they were so mild, some never called in a physician.
16. No; not when it was known they had it in the family.
17. None died.
19. A great many cases.
20. May and June.
21. Yes.

JEFFERSON COUNTY.

STEUBENVILLE.

REPLIES BY A. A. ELLIOTT, M.D.

1. No.
3. Less.
4. None.
6. Few isolated cases.
7. November and December.
8. Unknown.
10. Very mild.
13. Have no means of knowing.
14. Good many cases last fall.
15. No.
16. No.
17. Yes.
19. Few cases.
20. Fall and winter.
21. No.

KNOX COUNTY.

BRANDON.

REPLIES BY HENRY VIGOR, M. D.

During June and July there were about fifteen cases of measles in this village and surrounding country. About four per cent. was serious, having inflammation of the throat and congestion of the lungs, attended with persistent cough.

There has not been as much sickness as usual. The prevalence of cholera morbus was the principal sickness in August, produced by the continuence of high temperature. But I saw no case of cholera infantum nor scarlet fever; no diphtheria. Children with measles did not attend school nor visit other families during their sickness. That was all the precautions taken to prevent the spread of disease.

The sanitary conditions are generally good in this locality. We have only had three cases of typhoid in six years, and none during the past year. Not over four cases of dysentery during the present year, 1887. Two deaths *only*; by phthisis polmonalis.

CENTERBURG.

REPLIES BY W. O. PHILLIPS, M. D.

Our village has been comparatively free from epidemic influences during the year. The amount of sickness did not vary, materially, from previous years, as we usually have typhoid fever in autumn.

The above disease was endemic during the months of September and October. Dry, hot weather, and scarcity of water supply seemed to favor its development, together with a filthy condition of the town. Nearly all our cases occurred in the north part of town, where the surface is low, and most of the drinking water is not of the best quality on account of shallow wells in close proximity to privy vaults. The majority of these wells will not exceed fifteen feet in depth. We are without a board of health, and, in consequence, none of the above vaults are made water-tight. They thus become holes for the reception of fecal matter, which is easily carried to the adjoining wells. Moreover, many of these vaults(?) are ditched into the main sewer, into which empty drains from cellars. During our dry weather, when the tile are not full of water, emanations from these holes find way to our cellars, contaminating our homes by these poisonous gases. What we most need at present is a board of health that will investigate this subject, and remove, as far as possible, the above deplorable conditions.

One or two cases of diphtheria occurred during the year, supposed to have been caused by drinking water from a well on the school ground which contained several dead rats.

We had no scarlet fever.

Isolation and disinfection were practiced in all case of diphtheria, to the best of my knowledge. Children and teachers, exposed to diphtheria, were not allowed to attend the public schools, but were not otherwise isolated.

No public funerals were held from above diseases.

We think isolation and disinfection have controlled what might have been a severe epidemic of diphtheria.

DEMOCRACY.

REPLIES BY L. H. CONLEY, M. D.

1. No.
3. Less.
6. One case.
7. August.
8. Idiopathic.
9. One.
10. Croupous diphtheria.
12. Fair.
13. No.
14. None.
16. No.
17. Yes.
19. German; one case.
20. October.
21. No.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

KNOX COUNTY—Continued.

FREDERICKTOWN.

REPLIES BY W. W. PENNELL, M. D.

1. Yes.
2. Influenza, general to all ages; dysentery.
3. Greater.
4. Catarrhal.
5. No; except in the cases of dysentery; the hot, dry weather was the cause.
6. Had seven cases.
7. August, September and October.
8. Low water.
9. One.
10. Mild.
11. Contagion.
12. Good.
13. The case was carried by contagion; the patient visited a neighborhood miles away where diphtheria existed.
14. None.
15. Yes.
16. No.
17. No funerals.
18. Successful in the one case.
19. Had thirteen cases.
20. May and June.
21. Yes.

GANN.

REPLIES BY J. D. SMITH, M. D.

1. No.
3. Less.
4. Diphtheria.
5. No special cause.
6. A few cases.
7. August and September.
8. Decayed vegetable matter.
9. Twelve.
10. Of a mild type.
11. None.
12. Good.
13. They did not.
14. Had none.
15. Disinfection practiced with diphtheria but not isolation.
16. They were not.
17. Yes.
18. Did not seem to spread any; confined to families.
19. Had none.

GAMBIER.

REPLIES BY A. D. WELKER, M. D.

1. No.
3. Less.
4. None.
6. None.
9. None.
14. None.
19. None.

More colds prevailed than usual, and I attribute them to our east and northeast winds, they prevailing more than usual.

HOWARD.

REPLIES BY NORMAN HULL, M. D.

1. No.
3. Less.
4. Malarial fever.
5. No.
6. Limited.
7. October and November.
8. Nothing uncommon.
9. Fifty cases.
10. Mild.
11. None.
12. Medium.
13. No.
14. None.
15. Yes.
16. Yes.
17. Yes.
19. None.

MT. VERNON.

REPLIES BY E. R. EGGLESTON, M. D.

1. No; or very slightly.
3. Less.
4. Catarrhal.
5. Possibly atmospheric.
6. Little.
7. August.
8. Foul drinking water.
9. Very few.
10. Malignant.
14. Not to excede five in my practice.
15. Yes.
16. No.
17. No deaths.
18. Did not extend.
19. Little.
21. Isolation.

LAKE COUNTY.

PAINESVILLE.

REPLIES BY CHAS. M. HAWLEY, M. D.

In December, 1886, an epidemic of measles prevailed in our city and surrounding country, continuing in mild form until late in the spring. A few cases were noticed in June. The attending mortality was very small.

Later in the winter mumps also were prevalent, and with measles and mumps appearing nearly simultaneously, the attendance of children at school was lessened to such an extent, that in some localities no effort was made to continue the sessions. A much greater proportion of the adult population suffered from mumps than is usually noticed.

Besides the diseases already mentioned, the amount of sickness occurring during the year past has not varied much from that reported during former years.

A few typhoid fever cases have been reported from time to time, mostly, however, in August to October, inclusive.

Our city has had almost perfect immunity from ravages of diphtheria and scarlet fever during the year ending October 31st; at least, there are no deaths recorded during that period. In the neighboring township, however, fatal cases of diphtheria have been reported.

As a rule, in these diseases isolation and disinfection are enforced, and the children of families attacked by the disease are not allowed to attend school or public gatherings. Upon inquiry, however, I understand that the public funeral is very rarely dispensed with.

MADISON.

REPLIES BY A. H. STOCKHAM, M. D.

1. Yes.
2. Diphtheria; fifteen or twenty cases. malignant; five or six deaths.

LAKE COUNTY—Continued.

3. Average.
4. Diphtheria.
5. No special cause.
6. Very limited.
7. Cannot say; only two or three cases in town.
9. Fifteen or twenty.
10. Malignant.
11. Originated in family with very poor hygienic surroundings, and was of a malignant type. The spread of the disease was through the medium of one grade in our common schools.
12. Generally good.
13. Yes; the grade in which the children of the first family infected attended school, furnished every case in the village.
14. Very few cases if any.
15. Yes; to my knowledge.
16. To a limited extent only.
17. No.
18. Apparently they were successful.
19. Limited—perhaps four cases.
20. April.
21. Yes.

WEST MENTOR.

REPLIES BY L. H. LUSE, M. D.

1. No.
3. Less,
4. No prevailing disease.
6. None.
9. Fifteen or twenty.
10. Mild.
11. Impure water.
12. Poor.
13. Only by taking care of the sick.
14. Few cases.
15. Yes.
16. No.
17. No; eight deaths.
18. No one permitted to be with the sick but those taking care of them.
19. Few cases.
20. May and June.
21. Yes.

The past year was very healthy, and no prevailing diseases.

PERRY.

REPLIES BY R. L. ASHLEY, M. D.

1. None.
3. About the same as previous year.
6. Had but one case.
7. This case in July.
8. It was developed in Ashtabula City.
9. Not one.
14. One case only.
15. It was, and no other cases contracted.
16. No; closed schools.
17. At house.
18. Limited to the one case.
19. Not any.

LAWRENCE COUNTY.

BURLINGTON.

REPLIES BY F. H. WILLIAMS, M.D.

1. Yes; during the spring months.
2. Measles. This disease prevailed extensively here during the months above indicated, and was of unusual severity, there being four deaths; two adults and two children.
3. Sickness in this locality has been about the same as in preceding year, with exception of epidemic above stated.
4. If any diseases were more than usually present, they were those of a malarial type.
5. Not attributable to any special cause.
6. To about the same extent of previous years.
7. August and September.
8. No unusual conditions.
9. But one case of diphtheria in my practice.
10. Mild.
11. Sporadic in origin and was not communicated to any other person.
12. Sanitary condition of house where this one case occurred was bad.
13. No.
14. No scarlet fever.
19. Measles largely prevalent, as noted above. I had from fifty to sixty cases under my care during the epidemic, with two deaths from lung complication due to exposure.
20. In spring months.
21. The schools were closed; otherwise no precautions taken.

Aside from the epidemic of measles, there has been nothing unusual to report. I think the health in this locality has been quite as good as any previous year; better than some. We do not have much typhoid fever here; our continued fever being mostly of malarial form, but often taking on typhoid symptoms,—the so-called typho-malarial fever. We feared typhoid fever because of the long continued drouth, and insufficient water supply, but our fears have proved unfounded to this present date.

MILLERS.

REPLIES BY H. V. SANNS, M. D.

There was no epidemic of any kind in our neighborhood during the last twelve months. There were a few cases of a very mild type of rubeola; they were treated by domestic remedies, no physician being called in attendance; they occurred last spring. There was no diphtheria or scarlatina. A few cases of typhoid fever; about the amount we usually have every fall, occurring mostly in the months of September and October, and also a few sporadic cases of dysentery during August and September.

The typhoid fever and dysentery I ascribed to the impure state of our drinking water. Our section of country has been subject to a prolonged dry season, and the drinking water in some neighborhoods has become very foul.

PROCTORVILLE.

REPLIES BY G. R. RICKETTS, M.D.

1. None.
3. Less in the village but more surrounding.
5. Dry weather, seemed the cause.
6. Considerable.
7. October.
8. Water.
9. Ten.
10. Mild.
11. None.
12. Generally bad.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

LAWRENCE COUNTY—Continued.

13. Saw nothing conclusive.
14. A very few mild cases.
15. Not as it should have been.
16. No.
17. No deaths.
19. In only a few families.
20. In spring months.
21. Yes.

In regard to typhoid fever, I had four cases, all young men from 17 to 19 years, who worked in one shop in Huntington, W. Va., and six cases immediately opposite the same shops, across the Ohio river; all of whom used water obtained from a spring which issued from under the river bank, on the West Virginia side, they crossing the river to obtain it every day.

There were no cases in that vicinity except those using the water mentioned. The springs run out below the gravel-bed, and can only be reached in low water, and are known as the Bank Springs. The water is cool and clear, but tastes of iron and sulphur, and is thought to be healthful by the above named people.

ROCK CAMP.

REPLIES BY M. E. RAMEY, M. D.

1. Yes.
3. Greater; typhoid fever.
5. No.
6. Bad.
7. August; latter part.
8. High temperature and barometer.
9. None.
14. None.
19. None.

Typhoid fever.—I attach the cause to bad drinking water in every case; the cause seems to be plain The symptoms at first seemed to be masked or mixed with malarial fever, but gradually typhoid symptoms would develope, and run from fifteen to twenty-one days, usually terminating favorably; mostly commencing in August, some in September.

LICKING COUNTY.

ALEXANDRIA.

REPLIES BY D. WILLIAMS, M. D.

1. No.
3. Less.
6. None.
9. Six cases.
10. Mild.
14. None.
15. Yes, as far as practicable.
16. No.
19. None.

APPLETON.

REPLIES BY D. S. WEAVER, M. D.

1. No.
3. More.
4. Typhoid fever.
5. Yes.
6. Great.
7. October.
8. Decaying animal water.
9. None.
14. None.
19. Light.
20. Spring.
21. No.

FREDONIA.

REPLIES BY WATSON LAWRENCE KING, M. D.

1. No.
3. Less.
4. Diphtheria.
9. Eight cases.
10. Malignant.
12. Good.
13. None.
15. Disinfection in all; isolation in some.
16. No.
17. In one case.

In answer to questions 12 and 13 I would say, that in one house the sanitary conditions were bad, isolation was impossible, and there were three cases, occurring one after the other. There were also quite a number of cases in the neighborhood, of mild sore throat, of diphtheritic character, but I am not in the habit of calling such cases diphtheria, though I am aware many doctors do.

GRANVILLE.

REPLIES BY HON. E. SINNETT, M. D.

1. No.
3. About as previous years.
4. Influenza and bronchial.
5. No special causes.
6. Only a few, if any, genuine typhoid fever cases.
9. I know of but two.
10. Croupy complications.
12. Good.
13. No.
14. None.
15. Yes.
16. No.
17. Yes.
18. Cannot determine.

GRATIOT.

REPLIES BY A. D. S. M'ARTHUR, M. D.

2. A few mild cases of scarlet fever; common type.
3. Less than common.
4. Pneumonia.
5. Damp weather, and sudden changes.
6. Six cases.
7. December, '86, January and February '87.
8. Cannot say.
9. Four.
10. Mostly mild; none fatal.
11. Sporadic.
12. Good and bad.
13. No; cases mild and not contagious. Prophylactics were used freely, and sometimes isolation.
14. Six in one family; children.
15. No; only in part.
16. No; kept apart until desquamation was complete; not often sequalæ.
17. No deaths.
18. I believe these partial efforts at isolation and disinfection prevented an epidemic.
19. None last year.

We have a healthy locality here, being high and dry; clay soil; open country; away from large streams, and quite free from malarial influences.

LICKING COUNTY—Continued.

KIRKERSVILLE.

REPLIES BY F. W. RANKIN, M. D.

No epidemic has occurred in this locality during the past year.

During a residence here of eleven years I have never known so little sickness.

Typhoid fever has not prevailed to any extent. I have seen two cases of what were reputed to be typhoid fever, but what really were what are designated as typho-malarial. They occurred in the month of October.

I have not seen a single case of diphtheria during the year. From evidence gathered in an epidemic in this locality a few years ago, I believe diphtheria to be a communicable and an inoculable disease. One case in point: They might be multiplied. Diphtheria occurred in the family of one of the residents of this town. The grandmother of the litle sick girl. who lives in an adjoining county, twenty-six miles distant, in a locality where diphtheria did not prevail, was summoned and came, bringing with her a daughter of sixteen years, upon whom a good part of the nursing devolved. Two days after the arrival of the grandmother and her daughter, the little girl died, and they(grandmother and daughter) returned to their home. Three days after their arrival home the daughter, sixteen years of age, took sick of diphtheria. I saw her in consultation on the fourth day of her sickness. She died on the fifth. Isolation and disinfection were practiced in this case, and other cases did not occur.

The above, I believe, to offer conclusive proof of the contagiousness of diphtheria.

In the month of October I had under care six cases of scarlet fever; none malignant. Isolation was practiced as far as practicable. Children from these families were not permitted to attend school.

Public funerals are, and always have been held here. The more malignant the disease and deadly the contact, the greater the curiosity and the bigger the crowd.

I regard public funerals held in death from diseases such as have been named as a crime that ought to be suppressed.

Measles has not specially prevailed, and no precautions have been taken to limit its spread.

OUTVILLE.

REPLIES BY S. S. RICHARDS, M. D.

1. No.
3. Less.
4. Rheumatism.
5. Cause not known.
6. None.
9. Five.
10. Mild.
12. Good.
13. No.
14. One family—five cases.
15. Yes.
16. No.
17. No death.
18. Complete.
19. None.

ROCKY FORK.

REPLIES BY E. HARTRUM, M. D.

1. No.
3. Not so much.
4. Typhoid fever.
5. Caused by malaria.
6. Ten cases.
7. Last winter and first of spring.
9. Fifty cases.
10. Mild at first, then quite malignant—21 cases in seven families.
12. Good.
13. Yes, occurring in other members of same families in seven to nine days.
15. Yes.
16. No.
17. None occurred.
18. Generally successful.

UTICA.

REPLIES BY A. E. SMITH, M. D.

Your call for the state of health of our locality for the past year has reached me. In reply, will say that we had an epidemic of measles and one of whooping-cough. Measles appeared in November, '86, and we were not without them until the following June. Pertussus came in March, '87. Many were attacked, and both diseases were above the average in severity. No special measures were employed to limit their spread. Excepting the above diseases, the amount of sickness was about the same as for the past six years. I know of some half a dozen cases of typhoid fever. These occurred in September—last half—and October. The long-continued drouth may have been a causative factor. The first cases were the most severe. I had knowledge of perhaps a dozen cases of diphtheria, some three miles north of Utica, in Knox county. The disease was severe. I learned nothing definite about the origin of the outbreak. Of the cases I saw the sanitary conditions of the premises were fair. They all occurred in farm houses. In two instances, at least, several members of the same family were attacked. Isolation was practiced. Children from these families were not debarred from public places, and I know personally of one case of death where a public funeral was held, the remains being carried into the church. We had no scarlet fever.

LOGAN COUNTY.

BELLE CENTRE.

REPLIES BY W. S. PHILIPS, M. D.

1. Yes—diphtheria.
2. The clearly defined boundary of the area in which epidemic prevailed.
3. About the same, with addition of the above.
6. To a slight extent only.
7. October.
8. Drouth and filthy drinking water from wells almost dry.
9. About 100.
10. Malignant at first, growing milder, until it gradually disappeared.
11. It started in two or three families near together about at once, there being no possible exposure to infection from others.
12. Fair.
13. Where isolation was impossible one to four other members of the family were infected.
15. No.
16. Were kept from school, but not entirely from other places.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 4 and 35 of this Report.

LOGAN COUNTY—Continued.

17. No.
18. The disease was limited in area by some unknown cause foreign to any precautions taken.

DE GRAFF.

REPLIES BY W. W. HAMER, M. D.

1. Yes.
2. Diphtheria.
3. About the same.
4. Diphtheria, typhoid fever and measles.
6. More than usual.
7. September and October.
8. Poor water in most cases.
9. About fifty cases.
10. Many cases malignant.
12. Some good, some bad.
13. Yes, going through families and neighborhood.
14. But little.
15. Yes.
16. No.
17. Some cases.
18. Majority were controlled.
19. About 300 cases last winter.
20. February and April.
21. Yes.

EAST LIBERTY.

REPLIES BY D. H. PIERCE, M, D.

1. No.
3. Greater.
4. Typhoid fever.
5. To bad water.
6. Quite extensive.
7. August and September.
8. Bad water.
10. Of a lingering type.
12. Fair.
13. No.
14. Not any.
15. No.
16. No.
17. Yes.
18. Not many cases occurred.
19. None.

HUNTSVILLE.

REPLIES BY J. P. OWEN, M. D,

1. No epidemic.
3. About the same.
4. Remittent fever.
5. Malaria.
6. Nine cases.
7. September.
8. Low water.
9. No cases.
14. No scarlet fever occurred.
19. About twenty cases.
20. March.
21. Yes; patients closely confined.

This has been a very healthy year in this neighborhood; we have had some whooping-cough throughout the year, with quite a good deal of acute catarrhal trouble.

QUINCY.

REPLIES BY N. V. SPEECE, M. D.

1. No.
3. Less; never was so healthy during September and October as this year.
4. None.
6. About the usual number of cases. I am satisfied that if rain had fallen in the usual amount there would not have been a single case of typhoid to report.
7. November.
8. The conditions were such as were unusually favorable; bad drainage and filthy surroundings; bad drinking water and utter recklessness as to cleanliness of surroundings.
9. Only one case of diphtheria.
10. Bad surroundings; river water for cooking and drinking purposes; and hauled three miles at that; filthy residences and filthy surroundings.
11. Malignant, as would be naturally supposed from the causes producing it; believe this case to have occurred from filth and bad water.
12. Bad as could be.
16. No.
17. No.
19. Not at all.

The cases of typhoid, malarial and that class of diseases could all be traced to filth and bad water, used for drinking and cooking. Not a case has occurred in my territory where people used precautions or instructions as to cleanliness and good water. Water was boiled by all in the immediate neighborhood of typhoid cases, and everything kept clean and well disinfected; and not a single case was developed of any character of disease among or in families who thus followed instructions. In my opinion the bacilli of typhoid cannot live and thrive where an honest effort is made to keep clean and furnish a pure water supply.

RUSHSYLVANIA.

REPLIES BY JOHN WALLACE, M. D.

1. Typhoid; light epidemic.
2. About one per cent. in population of 3,000 were affected with typhoid.
3. Less.
4. Acute bronchitis and typhoid fever.
5. Cause of typhoid may be removable.
6. One per cent. of population.
7. September and October.
8. Drouth.
9. None.
14. None.
16. No.
19. Slight.
20. June and July.
21. Yes.

WEST LIBERTY.

REPLIES BY BEN. S. LEONARD, M. D.

1. No.
3. About same as last year.
4. None.
6. Eight cases.
7. November.
8. Water supply.
9. A few.
10. Isolated cases
11. I know of none.
12. Fair.
13. No.
14. Been none in this vicinity.
19. No measles.

The past two years have been the healthiest I have ever known in this community. We have had no epidemic of any kind during the last year, and only an ordinary amount of the common diseases to be found at most any season.

ZANESFIELD.

REPLIES BY CHAS. M. WANZER, M. D.

1. No.
3. About the same.
4. Typhoid fever.
5. Low water. No.
6. Fifteen cases.
7. August, September and October.
8. Drouth.

LOGAN COUNTY—Continued.

9. Five cases.
10. Mild.
12. Four.
13. No.
14. Very little; four cases.
15. In my practice; yes.
16. No.
17. No.
18. Almost completely.
19. To considerable extent.
20. February and March.
21. Schools closed.

One case of scarlatina originated from a child two years old playing with a rubber rattlebox and some other playthings of a child that had died of the same disease nine months previous; both cases were fatal and very similar in general character.

I based the diagnosis on the exposure above named, and the results bore me out.

LORAIN COUNTY.

AVON.

REPLIES BY E. L. HANNUM, M. D.

1. No.
3. Less.
4. No particular one.
6. A few cases.
7. November and December.
8. Poor water.
9. None.
14. Probably a half dozen cases.
15. Yes; in cases I attended.
16. No.
17. No deaths.
18. Confined to individual houses.
19. Only a very few cases.
20. March.
21. None in particular.

General health of this locality unusually good.

OBERLIN.

REPLIES BY JULIA C. JUMP, M. D.

1. No epidemic has prevailed in Oberlin during the past year.

3. The amount of sickness was about the same as in previous years.

6. We had three or four cases of typhoid fever.

7. These occurred in September and October.

8. One case was traced to impure well water. One patient came home sick with typhoid fever after several weeks absence.

9. There were no cases of diphtheria

14. No cases of scarlet fever occurred.

19. There were about twenty-five cases.

20. These occurred in May and June.

21. Isolation was enjoined as far as practicable.

The water supply has been scant for the past few months, owing to the prolonged drouth. The water in the wells was low, and many of the cisterns became empty. During the year water works have been introduced, bringing an ample supply of pure spring water from springs at the head of a branch of Vermillion River.

WELLINGTON.

REPLIES BY J. W. SMITH, M. D.

1. Yes.

2. Measles; never before so extensive; much pulmonary complication.

3. Less; excepting measles.
4. None but above.
6. Probably no cases.
9. Very few; none fatal.
10. Of light character.
12. Seemingly fair.
14. Very few cases; none fatal.
15. I believe yes.
16. No.
17. No.

18. Can't tell; such prophylaxis seems inoperative.

19. As stated above; very prevalent.
20. February and March.
21. Schools stopped.

LUCAS COUNTY.

SYLVANIA.

REPLIES BY THOMAS COSGROVE, M. D.

3. Less.
9. Ten cases.
12. Fair.
13. No.
14. Seven cases.
15. Yes.
16. No.
17. No.
18. In all cases.
19. About seventy-five cases,
20. February, March, April and May.
21. Yes.

MADISON COUNTY.

MT. STERLING.

1. Whooping cough.
2. Not large.
3. About the same, except as below.
4. Typhoid fever.
5. No.
6. About thirty cases.
7. August, September and October.

8. There are no sewers in the town. Underneath the soil there is a "hard-pan" that holds the water; wells are dug into this to the depth of twelve to twenty feet, and do not strike streams of water, but will fill up with from five to eight feet of water. During the long, dry weather, all of them got very low, and many of them went entirely dry. Many of these cases were mild, and such went by the name of malarial and typho-malarial fever. Your correspondent considers the great majority of them typhoid fever.

9. None.

14. Four cases only, one of which was in my own practice.

15. In my own care, yes; cannot say as to the others.

16. No.
17. No.

18. My own case was in a family of five children. The case was imported from Co-

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NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 34 and 35 of this Report.

MADISON COUNTY—Continued.

lumbus; isolation and disinfection were faithfully carried out; the disease was not communicated to any other person ; in cases not in my practice it attacked one member of the family and was communicated to the remaining members of the family to the extent of two or three.

19. None.

PLAIN CITY.

REPLIES BY F. N. MATTOON, M. D.

1. Not really any epidemic.
3. About the same as previous years.
4. Dysentery and diarrhœal troubles.
5. Not to any removable causes.
6. Hardly so prevalent as years before; cannot give definite number; about one-half dozen.
7. Autumn months.
8. Cannot be easily traced definitely to any specific cause.
9. Hard to tell; for many cases of so-called diphtheria were nothing more than severe cases of tonsillitis.
10. Non-malignant.
11. Not easily traced; sporadic.
12. Some fairly good, others extremely poor.
13. Only in families; one case would develop and frequently one or more cases follow.
14. Don't know of any.
15. Disinfection some, isolation none.
16. Some were, some were not.
17. Typhoid fever, yes.
18. Almost entirely limited to families in which they occurred.
19. Almost epidemic, though not sufficient to stop our schools.
20. Spring months.
21. Very few.

RANGE.

REPLIES BY C. M. DEEM, M. D.

1. We have had no epidemic of any kind during the year ending October 31, 1887.

3. There has been less sickness in this neighborhood during the year just passed than during any one of the five preceding years. For five years preceding this we have had considerable typhoid fever, but it has fallen off very materially this year.

6. On the 31st day of October, 1886, I had four cases of typhoid fever on hand, all in one family. The cause I attribute to the water being contaminated from a privy vault which was located about forty feet from the well, and on higher ground. Typhoid fever has always been worse here during September and October. I have not seen a case of it this fall, though I believe Dr. Ogan, of Sedalia has treated two or three cases in this neighborhood.

9. There has been no diphtheria in the neighborhood during the year that I am aware of.

14. I treated one case of scarlet fever in April or May, 1887; it was a mild case, and the only child in the family. It was completely isolated from all other children, and the disease did not spread. The child was in Columbus seventeen days before it took sick, and is supposed to have contracted the disease there.

19. No measles here for three years.

The principal diseases here are of a malarial origin, some times in the form of malarial fever; some times as intermittent, and some times as diarrhœal disease. There has been no serious sickness, and very few deaths here during the last year.

There has been no diphtheria, no measles, no small-pox, no whooping cough, no erysipelas, no puerperal fever, and considering the extreme dry weather we think we have been very fortunate, and have great reason to be thankful.

SEDALIA.

REPLIES BY AMBROSE OGAN, M. D.

1. No.
3. About the same.
6. Eight or ten cases; about usual amount.
7. September and October.
8. Low water.
9. Two.
10. Mild.
11. Sporadic.
12. One good, one bad.
13. No. One case came from Kentucky a few days previous to taking the disease.
14. None.
15. Disinfection, but not isolation.
16. No.
17. No deaths.
19. To a limited extent.
20. April and May.
21. No.

The health of our neighborhood has been exceptionally good, with the exception of the months of September and October, during which time malarial fever of a typhoid character prevailed, with some typhoid, caused, in my opinion, by low stage of water in wells.

WEST CANAAN.

REPLIES BY WM. H. JEWETT, M. D.

1. No.
2. Extremely healthy.
3. Much less.
4. In hot weather cholera morbus and summer complaint.
5. To the extreme heat.
9. None that was actually diphtheria.
14. None for five years.
19. None.

This vicinity has been very clear of epidemic disease during the year. I have lived here for fifteen years and no year has been as clear of epidemics as the past.

I have been in consultation in several cases of typhoid fever in the vicinity of Hilliard. The prevalence of typhoid fever in that vicinity I attribute to the poor water suppy. In that part where I had opportunity I advised the use of water which had been boiled.

The town in which I live has about 150 inhabitants. The water supply has been good the past season. The country is underlaid with gravel.

In the year 1882 there was quite an epidemic of fevers here, of typhoid type.

WEST JEFFERSON.

REPLIES BY J. N. BEACH, M. D.

3. About the same.
4. Typhoid fever.
7. September and October.
9. None.
14. Extensively.
15. No.
16. No.
17. No deaths.
18. But few precautionary measures.
19. Quite generally.
21. None.

There was a general prevalence of measles during the winter of '86, '87, and spring of '87. No precautionary measures to prevent its spreading and but a small proportion of the cases required treatment.

In April and May there were a great many

MADISON COUNTY—Continued.

cases of scarlatina simplex. Only one or two cases that were sufficiently severe to confine patients, but scores or dozens having the rash. In but few cases were there any sequalæ. The disease was so mild that no precautions were taken; let it run along until the material was exhausted.

As to Typhoid Fever.—It seems to me that the continued and protracted heat of the summer had much to do in paving the way for the general prevalence, by lowering vitality, or power to resist; and that the unprecedented low water of the wells, the drinking water thus being charged with organic matter, if not specific poison, accounts for quite a large number of the cases we have had.

MAHONING COUNTY.

CANFIELD.

REPLIES BY DANIEL CAMPBELL, M. D.

1 and 2. There was no epidemic during the year indicated.

3. The amount of sickness was less than usual.

4 and 5. There were none more prevalent than usual.

6. There were only a few cases of typhoid.

7. September and October.

8. In the cases that I can recall at present I think the cause was clearly traceable to impure water and faulty cellar drainage.

9. About twelve.

10. With a few exceptions, it was rather mild.

11. Every case was clearly traceable to some other case.

12. In general, the sanitary condition was good.

13. Every case, I think, offered such proof. One man with his family (wife and son of seven years) attended the funeral of a brother who had died of the disease. They brought home some of the clothes of the deceased. The son took the disease and died. The man, wife and sister-in-law, who lived with them, all had the disease. In every other case the patient had visited where the disease was or had been visited by a person who had it. I have on hand at present some cases, all of which are clearly caused by coming in contact with other cases.

14. There has been no scarlet fever within the year.

15. As far as possible.

16. No.

17. No.

18. Where the proper measures of isolation were followed out the spread of the disease was almost entirely prevented.

19, 20 and 21. Had no measles.

At present we are having some malarial fever, which seems to come from using water from wells which are almost dry. Many of the wells of the town and surrounding country are dry.

ELLSWORTH.

REPLIES BY G. W. BROOKE, M. D.

1. No epidemic has prevailed, although we have had a few cases of scarlet fever, diphtheria and measles, confined mainly to a few families.

3. Much less than for years.

4. None.

6. No cases near us.

9. Six cases, confined to two families in one locality, and one other case remote from the six above enumerated.

10. Very severe in the commencement, the first one of the six having unusually severe throat trouble, which was very persistent. All recovered. The one case, remote from the six above enumerated, was called membranous croup, and died.

11. Nothing known as to its origin.

12. Sanitary condition good.

13. Of the six, one child first had it, two neighboring children were exposed and had it, then the mother and grandmother and a young man living in the family.

14. Confined to one family of three cases—children.

15. As well as could be in the country.

16. No.

17. In the so-called case of "membranous croup" (diphtheria) a public funeral was held.

18. Quite successful, I think.

19. Four families—six cases.

20. June and July.

21. Yes.

GREENFORD.

REPLIES BY A. W. SCHILLER, M. D.

There has been no prevalent epidemic in Green township during the year ending October 31st, 1887. There was no excessive amount of sickness; in fact, less than the year previous. The diseases more than usually present were dysentery and so-called "bilious attacks." These latter (and I had about fifty cases of them) were characterized by pale-colored and frequent passages from the bowels, anorexia, jaundiced skin and conjunctiva, and in some cases marked depression of vital forces. Average duration about two weeks. The causes of the prevalence to an unusual extent of these diseases were, I think, the prolonged drouth, and consequent deterioration in quality of drinking water, and possibly the condition of the atmosphere. There has not been more than twelve cases of typhoid fever in the township during the year, and nearly all occurred during August and September. There were about six cases of diphtheria during the year, and, though severe, no deaths resulted. Some of the cases occurred sporadically, and others seemed to be the result of coming in contact with the disease in Salem, Ohio, near by. We had a few isolated cases of scarlet fever. Isolation and disinfection were practiced in all cases that came under my control, and, so far as I am informed, in all cases that occurred in the township. Children from families afflicted with these diseases were excluded from our schools, and I believe from all public places. There were no deaths from either of the diseases mentioned. The precautionary measures taken were successful in preventing an epidemic of the diseases. Measles occurred to a considerable extent during the spring months. There were no extraordinary precautions taken to limit the spread of the disease.

HAZELTON.

REPLIES BY J. J. LOUIS, M.D.

1. Not in this locality.

3. About the same.

4. None.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

MAHONING COUNTY—Continued.

6. Several cases.
7. August and September.
8. Dry weather.
9. None.
14. A few mild cases.
15. No.
16. No.
17. No deaths.
19. No cases.

NEW MIDDLETOWN.

REPLIES BY J. H. BLOOM, M.D.

1. Yes.
2. Diphtheria; of a malignant character in this town but mild in the country.
3. It has been greater than for several years.
4. Typho-malarial fever and diphtheria.
5. I attributed it to the drouth.
6. Had a few genuine cases.
7. August, September and October.
8. Do not know.
9. Twenty-five.
10. Some cases very malignant, others mild.
12. Mild cases good; malignant cases bad.
13. I do not remember of any that were exposed outside of the same family that took the disease, though it generally affected all the members of a family.
15. Yes; as much as possible.
16. No.
17. In one case.
18. The disease gradually died out.
19. None in this locality.

NEW SPRINGFIELD.

REPLIES BY W. C. STAFFORD, M.D.

1. Yes.
2. Diphtheria; malignant; in one family.
3. Less.
4. Tonsilitis.
5. Sudden changes of temperature.
7. October.
8. Not able to tell.
9. About fifteen.
10. Mild in all but three.
14. No cases.
15. Yes.
16. No.
17. No.
18. Did not go out of family.
19. No cases.

Three of the cases of diphtheria were fatal; all in one family.

I would state uncleanliness as the cause. Cellar all full of mold; in garret a rotten ham, not seen for years till I found it, together with old dusty and foul carpets.

NORTH BENTON.

REPLIES BY C. M. HOOVER, M.D.

1. Fever has been more prevalent.
2. Typho-malarial and typhoid.
3. Greater than preceding year.
4. Scarlet fever, and the above.
5. I think it is owing to the drouth; impure water; not removable.
6. Eight cases in part of Smith and Goshen townships.
7. September and October.
8. Goshen township has a number of small cat swamps not drained, and the fountains became very low.
9. Only three cases in one family.
10. Very severe; I will give a history of the cases, showing conclusive evidence of its contagious character.
14. I had a number of cases, but limited to three or four families, and they were apparently sporadic; three in one family.
15. They were isolated, and I used disinfection in the diphtheritic cases, and in part of the scarlet fever cases.
16. No.
17. No deaths.
19. Have had no epidemic.
20. Wm. Cortney, age, 24 years, was taken with a chill September 1, 1887, while away from home on a visit; was brought home on the 2d, when I was called; saw him after midnight; he was suffering with tonsillitis, involving right tonsil; exudation took place on the 4th; right tonsil broke the 5th; exudation involved the nasal passages, fauces, and the upper portion of the larynx. I isolated his sister as soon as I discovered the first appearance of the membrane. His case was very severe; his throat was re-inoculated three different times; when the last exudate came off, it left the throat perfectly raw. Uvula sloughed off; it left an ugly ulcer in right tonsil. The mother contracted the diphtheria from the son, and the daughter from the mother, as the daughter could not be kept from the mother. The young man is now suffering from nervous sequela.

WASHINGTONVILLE.

REPLIES BY JACOB BOSSERT, M.D.

1. Yes.
2. Roseola; about one hundred cases; all mild.
3. About the same, except cholera infantum.
4. Cholera infantum.
5. Excessive heat, crowding and filth, and lack of good water.
6. Two cases.
7. Early autumn.
8. Excessive dry weather.
9. None.
14. Nine or ten.
15. No.
16. No.
18. All recovered.
19. Eleven cases.
20. May and June.
21. But little, if any.

The population of our village is about fourteen hundred, from which to gather the health report. The summer here was exceedingly hot and dry, which, I think, accounts for deaths from cholera infantum, of which there were a number, perhaps, seven or eight.

The number of cases of roseola was astonishing. In thirty-five years practice, I never before saw so many.

MARION COUNTY.

GREEN CAMP.

REPLIES BY J. T. MARTIN, M. D.

1. No.
3. Considerably less.
6. None.
9. None.
14. Three or four cases in March, 1887.
15. Yes.
16. No.
19. A few cases.
21. Yes.

MARION COUNTY—Continued.

LA RUE.

REPLIES BY C. E. SAWYER, M. D.

1. Yes.
3. Greater.
4. Remittents and continued malarials.
5. To the drouth.
6. Greater than usual.
7. August and September.
8. Low water.
9. Very few.
10. Mild.
12. Poor.
13. No.
14. Limited.
15. They were.
16. They were not.
17. No deaths.
18. To a very great extent.
19. Very general all year.
20. June and July.
21. Very few.

MARION.

REPLIES BY AUGUSTE RHU, M. D., H. O.

2. Measles, attacking twenty per cent. of adults, and many deaths among them.
3. Greater.
4. Measles, typhoid and intermittent fevers, bronchitis, entero-colitis, and tonsilitis.
5. Dry summer and fall explains typhoid fever. Hot weather entero-colitis in children.
6. More frequent than present year.
7. In August and September.
8. Dry weather.
9. Some eight or ten cases.
10. Mild.
11. None.
12. Good.
13. Not particularly so.
14. But few cases.
15. So far as the regular medical profession was concerned, yes.
16. No.
17. No; as health officer I forbade such.
19. See above.
20. January, February, March, and April.
21. None that I am aware of.

MEDINA COUNTY.

BRUNSWICK.

REPLIES BY M. J. HAWKINS, M. D.

1. None.
3. Less than usual.
9. Four.
10. Very mild.
11. Not known.
12. Rather bad.
13. No.
14. Limited.
15 Yes; in all cases.
16. No.
19. Quite large, but mild,
20. March, April, May, and June.
21. No.

CHATHAM CENTRE.

REPLIES BY MILO MOODY, M. D.

1. Yes.
2. Measles. It was quite general, with one death from pneumonia.
3. Less.
4. Measles and dysentery.
6. But one case.
7. In September.
9. Not any.
14. No cases.
15. We had no cases of diphtheria.
19. General in this and adjoining townships.
20. February and March.
21. No.

HOMERVILLE.

REPLIES BY A. S. KINNAMAN, M. D.

1. Mumps.
2. Extremely prone to metastasis (testicle).
3. Less.
4. None.
6. None.
9. None.
14. None.
19. Slight; only two cases.
21. Cases isolated.

LODI.

REPLIES BY A. E. ELLIOTT, M. D.

1. No.
3. About the same.
4. Catarrhal bronchitis in the spring.
6. Two or three cases.
7. August.
8. Low wells.
9. No malignant cases.
13. No.
14. Very few cases—mild.
15. No.
16. No.
17. No deaths.
19. No measles.

SHARON CENTER.

REPLIES BY JAMES H. CASSIDY, M. D.

1. Measles.
3. Less.
6. Five cases.
7. All in March and April.
8. Bad cellars and imperfect drainage.
9. Four cases.
12. Good.
14. Three cases.
15. Yes.
16. No.
19. About twenty-five cases.
20. April.
21. Yes.

SPENCER.

REPLIES BY A. G. WILLEY, M. D.

It has been a very healthy season with us. German measles prevailed here the last of May and first of June; a few quite sick, the majority of cases requiring no treatment.

To my knowledge there has not been a case of diphtheria in this vicinity for two years.

No typhoid fever cases the past year.

A number of cases of pneumonia prevailed to some extent among the children last spring. All recovered in my practice.

To sum it all up, we have had a very healthy season, with very few deaths.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 84 and 35 of this Report.

MEDINA COUNTY—Continued.

WEYMOUTH.

REPLIES BY FRANK YOUNG, M. D.

1. No.
3. Less.
4. None.
6. Not more than three or four cases.
9. None.
14. None.
19. Very few cases.
20. March.
21. No.

MEIGS COUNTY.

LONG BOTTOM.

REPLIES BY E. W. RINE, M. D.

1. Yes.

2. Dysentery, extending over a territory about four miles square. The features of the various cases were nothing out of the ordinary. Being in an almost exclusive country practice, we had the advantage of good hygienic surroundings, and there were few fatalities during the epidemic.

By thorough disinfection, we had only one family in which the disease extended to the second one exposed during the entire epidemic, lasting during the greater part of August and a part of September.

3. Amount of sickness greater.

4. Dysentery, gastro-enteritis, and measles.

5. No.
6. Only a few isolated cases.
9. None.
14. None.

19. Not to such a degree as to be called epidemic, occurring only in families who had been directly exposed to the contagion.

20. February and March.

21. Children exposed were kept from school, and families kept from each other as much as possible.

PORTLAND.

REPLIES BY J. R. ARMITAGE, M. D.

1. No.
3. About the same.
5. I had none, but heard others did.
6. Very little.
9. None.
14. None.
19. About twenty cases.
20. In March and April.
21. No; the people wanted it; some tried to get it, but would not take it.

RUTLAND.

REPLIES BY A. A. STANLEY, M. D.

1. Yes.
2. Diphtheria.
3. Less.
4. Diphtheria.
5. Cannot say.
6. Not a case.
9. About twenty.
10. Sthenic.
12. Good.
13. Several in a family, one after another.
14. None.
16. No.
17. Yes.
19 Do not remember a case.

MERCER COUNTY.

MARIASTEIN.

REPLIES BY A. P. RENNEKER, M. D.

In reply to circular, would state that have had no particular epidemic of any kind this year, unless it was an epidemic of pneumonia, in April. During said month I treated about seventy-five cases of pneumonia, both simple and complicated; all cases ran their natural course; I should ascribe this unusually large number of cases to the peculiar conditions of the weather at that time, the days being warm, interrupted frequently by sudden cold, bringing on sudden thermometric changes of 30° or more, some times in the space of twenty-four hours.

My neighbor and friend, Dr. J. L. Conti, of Carthagena, has had to deal with quite an epidemic of typhoid, and I have had one case of virulent and fatal typhoid, that could be clearly traced to his locality.

Outside of this one I have had but two cases of typhoid malarial, (recovered), and several cases of walking typhoid, all, however, since October 1st.

I have not had a single case of scarlatina, measles or diphtheria, and the standard of health in this locality has about equalled that of former years, it being, perhaps slightly more healthy during the present fall months than usual.

MENDON.

REPLIES BY G. R. HAGERMAN, M. D.

1. No.
3. About the same as the past year.
4. None.
6. Not prevalent.
7. August and September.
8. Dry and warm.
9. Few.
10. Mild; but few deaths.
11. Uncleanness.
12. Poor.
13. None; but prevailed in some families.
14. None.
19. A few cases in one family.
20. March.
21. Yes.

Being in a small village our sanitary condition is good. Water rather plenty, and mostly from wells, thirty to forty feet deep. Good facilities for drainage, as river bed is twenty-five feet below the town (surface) ground.

MERCER.

REPLIES BY T. W. HARRIS, M. D.

In reply to your request I will answer only those which occurred in my practice, which was about the same the closing year as it has been the last four years.

Typhoid occurred in the months of July and August entirely, no cases any other months; but few cases in all; none fatal; no measles, no diphtheria; one case of capillary bronchitis, which followed the whooping cough.

This is all that is necessary to say on this subject, only I can tell you that this is the most healthy locality in the state.

MIAMI COUNTY.

ALCONY.

REPLIES OF A. MULLENDORE, M.D.

Typhoid fever, scarlet fever and measles have prevailed in this locality during the year ending October 31, 1887, to a greater extent than for several years previous.

It is very probable that the unusually dry weather had something to do with the propagation of the typhoid poison, but with regard to the causes of the unusual prevalence of the scarlet fever and measles, I have no special opinion to offer.

There were, perhaps, over a dozen cases of typhoid fever with only one death—that of an elderly lady,—and these cases, I think, all occurred during the month of September.

We had during the month of February a few cases—perhaps, half a dozen—of diphtheria; a few of them in a pretty severe form, with no deaths.

The sanitary conditions seemed good, and the origin of the disease is unknown. In regard to its contagiousness, I have nothing conclusive to offer.

No extra precautions were taken to limit the spread of any of these diseases any further than what is generally practiced by the people themselves, in a general way, by keeping from coming into direct contact with those who are affected with contagious or supposed contagious diseases.

Of course, the public schools were guarded against scarlet fever by preventing children from families in which the disease prevailed from attending.

Measles prevailed in a pretty severe form in January and February, with perhaps a dozen or more cases in this territory, although they prevailed to quite an alarming extent in adjoining territory north of us.

We had a few cases of inflammatory rheumatism; a very few cases of pneumonia; no membranous croup. Two deaths from carcinoma; one death from puerperal convulsions.

Neuralgia seems to be on the increase also; not especially during the year just past, but during the last decade perhaps, and it seems to me that it would be for the benefit of humanity if this subject would be more generally discussed by observing physicians.

CONOVER.

REPLIES BY ROSS S. JOHN, M. D.

I would state that I have been located at this point but a few weeks, and that I am unable to answer many of the questions contained in your communication.

On inquiry among the citizens of this place, I learn that there was quite an epidemic of typho-malarial fever during the months of August and September. It was of a mild character, however, and no deaths occurred.

Can find no evidence of diphtheria or scarlatina during the year.

As to measles, I find that there were a number of cases last winter, but as to their character I have not been informed.

COVINGTON.

REPLIES BY JACOB KENDALL, M.D.

1. Yes.
2. Measles; quite extensive; visited almost every family where there were children; characterized by its mild form.
3. Greater.
4. Measles, scarlet fever and typhoid fever.
5. No.
6. Large extent.
7. August and September.
8. Scarcity of water.
9. Forty cases.
10. Mild form.
11. Don't know any.
12. Good as average.
13. No; they did not; some large families had only one case.
14. To no great extent.
15. No; only in a few.
16. No.
17. Yes; no children allowed to attend.
18. Very unsuccessful.
19. Great extent.
20. November, December, January and February.
21. Yes; with little success.

Typhoid fever prevailed mostly in the country where the surface is low and flat. Only two cases in Covington, and they were mild. Those in the country were in a bad form, at least one-half proved fatal. Covington is located on the bank of Stillwater, and nearly all wells are drilled in limestone rock, consequently, pure water, and seldom any typhoid fever in the town.

FIDELITY.

REPLIES BY J. H. DE BRA, M.D.

1. No.
3. Less.
4. Eruptive diseases and dysentery.
5. Yes; to a great extent.
6. Limited.
7. November.
8. Atmospherical.
9. Twenty-five cases.
10. Mild.
12. Poor.
13. Yes.
14. Limited.
15. To some extent.
16. No.
17. No.
18. To a great degree.
19. Limited.
20. December and January.
21. Yes.

PIQUA.

REPLIES BY S. S. GRAY, M.D.

1. Yes.
2. Measles; general; violent tendency to pneumonia.
3. Less.
4. Measles.
5. Public schools; no way practicable.
6. Small.
7. September and October.
8. None.
9. Probably twenty.
10. Very mild.
12. Generally good.
13. No.
14. Very few.
15. No.
16. Yes.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

MIAMI COUNTY—Continued.

17. Yes.
19. Almost universal.
20. December to May.
21. At first to keep it out of public, but was impracticable as to measles.

POTSDAM.

REPLIES BY S. P. DEAHOFE, M.D.

There has been no epidemic of any kind in our town or locality during the year. The health has been unusually good, with the exception of a few cases of typhoid fever. A few cases of diphtheria of a very mild type occurred during the year. Nothing conclusive concerning the contagiousness of the affection. No scarlet fever or measles.

One thing worthy of notice, and which should be brought prominently before the people is the necessity of not permitting children from families in which infectious diseases are present to attend the public schools. Also, holding public funerals in cases of death from these diseases, both of which are frequently violated here.

TROY.

REPLIES BY J. W. MEANS, M.D.

1. No.
3. Greater.
4. Measles, typho-malarial fever.
5. Bad water may have caused the typhoid fever.
6. We have had more cases of typhoid fever than usual, but no epidemic.
7. September and October.
8. Bad water.
9. None.
14. A few cases.
15. To some extent.
16. No.
17. No deaths.
19. Everybody had them.
20. January, February and March.
21. No.

Diphtheria is always imported here from some locality known to be infected.

At present, typhoid fever is more prevalent than at any other time during the year 1887. It is strictly an enteric fever.

MONROE COUNTY.

BEALSVILLE.

REPLIES BY B. DENNIE, M. D.

There has been no epidemic of any kind in this locality during the year ending October 31, 1887; in fact, less sickness than in any other year of the last decade. Typhoid fever and catarrhal pneumonia prevailed to some extent—the former in November and December, the latter in December and January. In preceding July had four typhoid cases in one family, undoubtedly attributable to the general use of water from a cistern the top of which was lower than the surrounding yard, permitting the filth of house and back yard to be washed into it. Being their only water supply, I directed them to boil all water from it and raise its surrounding surface. The November cases (five in one family) lived on a low, damp creek bottom, the house surrounded by high poplars. A few isolated cases occurred in December. The cases of catarrhal pneumonia were nearly all in December and January, confined largely to children and to a class made susceptible by privation and exposure.

LAINGS.

REPLIES BY S. J. DEVAUL, M. D.

1. No.
3. Less.
6. Not much.
9. A few.
10. Mild.
12. Good.
13. No.
14. None.
19. Many cases.
20. From January to May.
21. No.

STAFFORD.

REPLIES BY J. L. MASON, M. D.

1. No.
3. Less.
6. A few scattered cases.
9. A few scattered cases.
12. Good.
13. No.
14. Six cases in four families.
15. Not very much.
16. No.
17. No deaths.
19. None.

It is claimed that there is considerable typhoid fever at Caldwell, Noble county. I hear of a great many deaths from some cause in and about that place.

There have been five or six cases of typhoid fever in a family that lives six miles southwest of here on Duck Creek. I was called in consultation with Dr. Brock to see the mother, but as she died in half an hour after I got there I can give nothing certain as to the case. Three young men of the same family had a fever (the doctor thought it was remittent) before she was taken. They recovered in from three to six weeks. I understand that the father is down at present. There have been other cases and some deaths farther up the creek (this is called the east fork of Duck Creek), a distance of ten to fifteen miles from Caldwell, which is situated on the west fork of Duck Creek.

MONTGOMERY COUNTY.

DAYTON.

REPLIES BY J. M. WEAVER, M. D., H. O.

1. No.
3. About the same.
6. A few cases only.
9. Can't tell.
10. Mild.
12. Fair.
13. Several members of family affected.
14. A few cases only.
15. Yes, as much as possible.
16. No.
17. No.
18. To a very considerable extent.
19. Very little.
20. March and April.
21. No.

Remarks.—An ordinance relative to reporting cases of contagious diseases went into effect in our city in the early part of October. Previous to that time I have no means of knowing as to their prevalence, except such general knowledge as a practitioner usually possesses. Typhoid fever we are having but very little of, probably not more than a dozen cases during the fall and winter. Since the 8th of October we had of scarlet fever 36 cases, with 2 deaths; 30 cases of diphtheria, with 10 deaths.

MONTGGMERY COUNTY—Continued.

NEW LEBANON.

REPLIES BY O. F. EDWARDS, M. D.

1. Yes; diphtheria.
2. Within radius of about five miles, about seventy cases.
3. Less, if you except diphtheria.
4. Diphtheria.
5. Know of no cause.
6. Only one case.
7. August or September.
9. About 70 cases.
10. About one-third malignant, the balance mild cases.
11. Know of none.
12. No difference.
13. Could not ascertain any cause unless drouth and low water.
14. None that I know of.
15. I had parties to fumigate with burning sulphur, tar, etc.
16. They were not.
17. No.
18. In one family of eight children that I treated, four had diphtheria, malignant form; two recovered and two died, and four were exempt. Burned sulphur and tar.
19. None.

We have had quite an epidemic of diphtheria in New Lebanon and vicinity. In my practice I have had forty-seven cases to treat, about one-third of which were of a malignant form, the balance mild character. I lost five of the cases I had under treatment, and there were probably between twenty and thirty cases in this vicinity that were not under my care, of which six died.

I know of but one case of typhoid fever in this vicinity during the last year, (not under my care); boy recovered.

With exception of diphtheria, there has been less sickness this year than previous years.

GERMANTOWN.

REPLIES BY MICHAEL TROUT, M. D.

1. No.
3. About the same.
4. None.
6. Four cases.
7. August and September.
8. Low water.
9. None.
14. Not a case.
19. A few cases.
20. April.
21. Isolation.

DEAN.

REPLIES BY SAM. SOUDERS, M. D.

Beavertown, or as it is now called Dean, is situated four miles southeast of Dayton; has a population of about 200 inhabitants, and has a densely populated country surrounding it. We had no epidemic of any kind during the past year or two. The amount of sickness was about the same as the year preceeding, or as usual.

There is scarcely ever a year that I have no cases of typhoid fever, diphtheria and scarlet fever. I had three cases of typhoid fever during the months of August and September; all recovered. No cause of the disease except it was the dry, hot weather.

As to diphtheria, I treated thirty-four cases, all of a mild form, and all recovered. There is scarcely a month in the year that I treat no case of diphtheria. There is no doubt in my mind as regards the communicability or contagion of diphtheria. For instance, Mr. A's little daughter, eight years old, had an attack of diphtheria; Mr. G's little boy, seven years of age, called in the room a few minutes with A's daughter; a few days later Mr. G's little boy had a full developed attack of diphtheria, which was subsequently communicated to three other children of G's family. Scores of similar cases I could relate if necessary.

As to scarlet fever, I have a few cases every year. In the past year I treated thirteen cases; all recovered. We have not had an epidemic of scarlet fever since the winter of 1876-77.

In the month of March, 1887, I treated five cases of measles, all in one family. The oldest daughter attended school in Dayton and was taken with measles. She was brought home and the disease was communicated to three little brothers and one sister; all recovered.

When I am called to a patient and find a contagious disease I practice isolation, among the children especially; prevent children from attending school and other public places, and recommend private funerals.

WEST BALTIMORE.

REPLIES BY J. L. SHILT, M. D.

1. No.
4. Bowel trouble, viz.: diarrhœa, dysentery, etc.
5. No.
9. None.
14. None.
19. None.

VANDALIA.

REPLIES BY LEE CORBIN, M. D.

1. No.
2. Have been unusually free from epidemics the last year.
3. Probably about the same.
4. None.
6. Not to exceed three or four cases.
7. In September.
8. No known cause.
9. None.
14. Had none.
19. There were three or four cases last spring.
20. March.
21. Ordinary precautions, i. e.: people who had not had them remained at home.

For the past five years this community has been remarkably free from contagious diseases. Have had occasionally a few isolated cases of measles, whooping cough, and a typhoid or typho-malarial case here and there, some of them fatal.

UNION.

REPLIES BY WALTER J. THOMSON, M. D.

1. No.
3. Less.
4. None.
6. Not unusual.
7. August; six cases.
8. Drouth.
9. None.
14. Slightly.
15. No.
16. No.
18. It was stamped out by isolation.
19. None.

NOTE.—The figures beginnidg paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

MORGAN COUNTY.

CHESTER HILL.

REPLIES BY A. J. PARKER, M. D.

1. No.
2. No.
3. Less.
6. Seven cases.
7. September.
8. Drouth and low water.
9. Four or five.
10. Not malignant, but the result of exposure.
12. Bad.
13. No.
14. Two cases—mild.
15. Yes.
16. No.
17. No deaths.
18. No extension of disease; form was mild.
19. No cases known.

Remarks.—I have been engaged in the practice of medicine in this part of Morgan county for seven years, and during this time I have, during the months of August, September, and October, had cases of typhoid fever, and some years it has occurred in malignant form. This year in our community the cases have been but few, but all of them very bad.

Our village is situated on high ground, and the country surrounding is hilly. In the town but little or no attention is paid to drainage. I think (from an investigation made by myself two years ago) that but three or four vaults are to be found in our neighborhood, and these are but three or four feet deep. Privies are all on top of ground, and but little attention has been paid to the disposition or the disinfection of stools from patients with typhoid fever. Water is obtained from wells or springs; the average depth of wells is about twenty feet. Vegetable matter is allowed to lie in our alleys and back streets and decompose. These may be some of the sources by which the germ is communicated to our people.

I would favor a law that would compel all parties, in country or city, to observe such sanitary regulations as the State Board of Health might suggest. One of these *germ-hatching dens* will infect a whole neighborhood, and should be looked after by the laws of the State, whether in city, village, or country.

To sum up the whole, in my opinion, the causes, as far as known, in this part of Morgan county are—

1. Privies on top of ground.
2. Decomposed vegetable matter.
3. Inattention to disinfecting excreta.
4. Shallow wells and springs.

DEAVERTOWN.

REPLIES BY G. L. KENNEDY, M. D.

1. Yes.
2. Measles and typho–malarial fever.
3. About the same.
4. Fevers.
6. Fifteen or twenty.
7. August, September and October.
9. None.
14. None.
19. Perhaps fifty cases.
20. Winter months.
21. None.

Measles were epidemic four months, from November to March, but, as a general thing, in mild form. But four deaths occurred.

Typho-malarial fever made its appearance in August, and, to a limited extent, still continues, and was caused by bad water and decaying matter. In one family of father, mother and six children all were sick except the mother; six at one time. The disease lasted on an average of five weeks with some twenty cases during this time; all recovered.

In most of the cases of typhoid fever the sanitary condition was very bad.

RINGGOLD.

REPLIES BY JAMES DAVIS, M. D.

1. No.
3. About the same.
4. None.
6. Ten or twelve cases.
7. September and October.
8. Bad water.
9. Not one.
10. Mild in type.
12. Good.
13. None.
14. Not at all,
19. There was but one case.

MORROW COUNTY.

BENNINGTON.

REPLIES BY F. C. SHAW, M D.

1. No.
3. No more than common.
7. July and September.
9. No more than we have any year.
11. Do not know.
14. Only two cases; no death.
16. No.
18. I had the houses disinfected.
19. None in this township.

I attribute our good health to living on a stream fed by springs, and not allowing any dead animals to decay on the ground. We are careful to make owners bury dead animals. Two years ago, I made three men bury dead animals, and they found out that we had a law that would protect health, and have the benefit of it, and we now have no trouble.

I have had only one case of typhoid fever, and had all discharges buried, and no spread. That case came from Cardington.

IBERIA.

REPLIES BY W. C. BENNETT, M.D.

1. Yes; diphtheria and measles.
2. About seventy cases of diphtheria and pharyngitis; about equally divided; in November and December, 1886; a few cases since.
3. With above exception about the same.
5. The worst cases all occurred along a sort of spring-run or swale, which has since been drained.
6. Three cases.
7. In September and October, 1887.
8. Bad water supply.
9. About forty well developed cases.
10. Six or eight malignant; others rather mild.
12. Not good.
13. We have not been clear of it in the community for eighteen months past, but cannot say there was conclusive proof of its contagiousness.
14. None to my knowledge.

MORROW COUNTY—Continued.

15. Not perfect, owing to surroundings; an attempt was made in every case.
16. No; schools and churches were closed for a time during the worst.
17. No.
19. Very general in the country; few in town.
20. Spring and early summer.
21. Some schools were closed, but that was all.

During the time diphtheria prevailed to greatest extent, nearly every child, and a good many grown persons, suffered with acute pharyngitis to a greater or less extent. In fact, there were all grades, from slight sore throat to most malignant diphtheria, sometimes in the same family at the same time.

MT. GILEAD.

REPLIES BY H. H. SHAW, M.D., AND W. L. CASE, M.D.

1. Yes.
2. Diphtheria; a mild epidemic occurring in February and March; percentage of mortality small.
3. About the same.
4. Diphtheria and typhoid fever.
5. Probably the drouth.
6. Extensively, but not in an epidemic form.
7. August, September and October.
8. Drouth; causing a deficiency of water supply.
9. About twenty.
10. Generally mild.
11. Apparently originated in or about school buildings.
12. With one exception, generally good.
13. Yes; school children communicated the disease to other members of the family.
14. There was not a case within our knowledge.
15. Yes; there was in regard to diphtheria.
16. No.
17. Yes.
18. Cannot tell.
19. Very few cases.
20. March, April and May.
21. None; excepting kept from school.

WHETSTONE.

REPLIES BY A. A. NEFE, M.D.

1. No.
3. Slightly greater.
4. Malarial.
5. To scarcity of water.
6. Three or four cases.
7. August and September.
8. Impure water.
9. Fifteen or twenty.
10. Some mild; others malignant.
12. Fair.
13. Yes.
14. None.
15. Not in all.
16. No.
17. Yes.
19. None.

Diphtheria showed its contagiousness in only one family, as reported in August. A young man, who had been working away from home, came home to see his sick relatives, and contracted the disease in a few days. In this family, I attributed the disease to drainage from a barn-yard toward the well. In another family, I attributed the origin of the disease to a foul smelling sink for waste water, and as soon as that was disinfected the cases began to improve.

With reference to typhoid and malarial fevers the main cause acting to produce them seemed to be scarcity of water. Many wells are dry, and others so low that the water is really stagnant, rendered impure by the accumulation of filth for years, and people continue to use the water rather than haul it from a distance. Even after knowing it to be impure, they will not take the trouble to boil it or purify it in any way.

MUSKINGUM COUNTY.

DUNCAN'S FALLS.

REPLIES BY O. B. CRUMBAKER, M. D.

1. The year was rather more than usually free from epidemics.
2. An epidemic of influenza prevailed during the months of December and January, quite a number of cases resulting in lung fever. No fatal cases, however, and nothing of special interest is remembered.
3. Rather less.
4. Catarrhal troubles.
5. Extreme changes of temperature within a short period of time. Flannel underclothing would undoubtedly lessen the tendency, but it is hard to make people in the country believe that.
6. Only four real and a few abortive cases.
7. September and October.
8. The extreme dry weather, and consequent scarcity of water in the wells.
9. Perhaps thirty or forty.
10. Generally mild.

11 and 12. The cases of diphtheria this year have been mild, and nothing was noticed as to the sanitary condition of houses. I had an opportunity of studying the disease some years ago, and formed opinions respecting it, but I understand the questions to refer to this year, and the cases this year were not of so serious a nature as to require much study.

13. As to proof of contagiousness, my own family may be taken as an illustration: The oldest boy, aged sixteen, contracted the disease in the month of December. In just one week from the time he was at the worst stage, four of the other children were taken down with it. One boy, who was away from home when the oldest was at the worst, took it just a week from the time he was exposed, and was staying over night with an aunt when *he* took the disease, and in just one week from that night her little girl took the same disease. Many similar cases might be cited showing conclusively the contagiousness of the disease.

14, 15, 16, 17, and 18. Only one case of scarlet fever occurred. No other children were allowed in the room except a nursing baby. The room was thoroughly disinfected, the child made a good recovery, and the disease spread no further. It was supposed that the child contracted the disease in Zanesville, where the disease was prevailing to some extent.

19. In perhaps a dozen families.
20. April and May.
21. Yes; children were kept isolated when it was known they were taking measles.

More care will be taken to record anything of special interest this year.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 34 and 35 of this Report.

MUSKINGUM COUNTY—Continued.

SONORA.

REPLIES BY J. D. JENNINGS, M. D.

1. None.
3. About the same as previous years.
6. But few cases.
7. August and September.
8. Low water.
9. Thirty or forty.
10. Mild.
12. Poor.
13. None.
14. None.
15. It always is.
16. No.
17. No deaths.
18. Can be limited by isolation.
19. None.

My opinion is that diphtheria, malarial fever, and some twelve cases of dysentery were occasioned by low water.

NEW CONCORD.

REPLIES BY HENRY M'CREARY, M. D.

1. No.
3. Less.
6. One case.
7. September and October.
8. Imported.

WHITE COTTAGE.

REPLIES BY A. W. SQUIRES, M. D.

1. No; but an endemic.
2. Dysentery was endemic.
3. The same, or about an average.
4. Dysentery.
6. I had none.
9. Three.
10. Mild.
11. None.
12. Houses rudely constructed and on low ground. Families poor, but cleanly.
13. No.
14. None.
15. Yes.
16. No.
17. No deaths.
18. Showed clearly a benefit.
19. Very little.
20. In March and April.
21. Yes.

NOBLE COUNTY.

HARRIETSVILLE.

REPLIES BY J. W. BROCK, M. D.

1. None.
3. About same.
4. Some malaria
5. I don't.
6. Only one case.
7. In October.
9. None.
14. None.
19. None.

KENNONSBURGH.

REPLIES BY J. H. ABBOTT, M. D.

1. No.
3. About same.
4. Pneumonia.
5. No special cause.
6. No cases.
9. None.
14. No cases.
19. No cases.

MT. EPHRAIM.

REPLIES BY JOHN KELLER, M. D.

1. No.
3. Less.
4. A few cases of malarial fever.
5. No special cause known.
9. None.
14. None.
19. None.

We are affected by no sluggish streams, altitude high, good water, sanitary conditions good from good drainage.

FULDA.

REPLIES BY JAS. T. BROWN, M. D.

1. No.
3. Less.
6. No cases.
9. Three cases.
10. Malignant.
11. No ventilation.
13. None at all.
15. No.
16. No.
17. No deaths.
19. None.

OTTAWA COUNTY.

ELLISTON.

REPLIES BY F. J. KLUSSMAN, M. D.

1. Scarlatina.
3. It was less.
4. Malarial fevers.
6. Four cases.

In our locality have been twenty-six cases of scarlatina, four of said cases Sc. Anginosa, all of which were fatal. There has, however, been more cases reported, and I have seen a few which were so mild that I did not advise any treatment whatever, and they all got well. Cases in infants one or two years old were usually very mild. We have had but few cases of typhoid, and all got well. Of remittent fevers, we had a good many cases. My books have a record of seventy-four cases of remittent fever, all of which got well.

GENOA.

REPLIES BY C. E. BAKER, M. D.

1. No.
3. About the same as for several years past.
4. None.
9. None.
14. Three cases in one family.
15. Yes.
16. No.
18. Disease did not spread.
19. No measles this year.

Remarks.—I know of no cases of typhoid in this vicinity during the year. Have heard of a few cases that have been so called, but am inclined to think they were misnamed. The general health has been remarkably good in this neighborhood during the year.

OTTAWAY COUNTY—Continued.

ISLE ST. GEORGE.

REPLIES BY CHARLES D. TOWNSEND, M. D.

1. No.
3. No greater—about the same.
4. None.
6. No typhoid.
9. None.
14. No scarlet fever.
19. No measles.

OAK HARBOR.

REPLIES BY GEORGE WOODWARD, M. D.

1. No.
3. Less.
9. None.
14. No.
19. Very mild.
21. No.

PAULDING COUNTY.

CECIL.

REPLIES BY LEVI STEARNS, M. D.

1. Yes.
2. Typho-malarial fever; no special features.
3. Less.
4. Dysentery and diarrhœa.
5. Drouth and bad water.
6. Limited.
7. September.
8. Bad water.
9. Five.
10. Very malignant.
11. Know none.
12. Good.
13. Nothing more than that in one family all except one had it.
14. There were but few this year.
15. Yes.
16. No.
17. No.
18. To a great extent.
19. Very few cases here.
20. April and May.
21. Yes.

DAGUE.

REPLIES BY C. W. GORDON, M. D.

1. Yes.
2. An epidemic of measles and typhoid fever from infection; also typho-malarial fever.
3. Greater.
4. Measles, typhoid and typho-malarial fever.
5. Atmospheric causes principally, and not removable.
6. To quite an extent.
7. October.
8. Poor hygiene principally.
9. Perhaps between six and twelve cases.
10. It was sporadic.
11. The origin was from poor hygiene.
12. Sanitary condition was poor.
13. No.
14. Limited extent; but a few cases could be traced to contagion, the rest to infection.
15. Yes, as nearly so as possible.
16. No.
17. Yes.
18. Where isolation was practiced it proved successful.
19. It occurred to a great extent, and spread very rapidly.
20. October and November.
21. A few precautions.

GILBERT'S MILLS.

REPLIES BY C. A. BRAY, M. D.

1. Yes.
2. Measles; general epidemic, and more fatal than usual.
3. More than usual.
4. Typhoid fever.
5. Yes, I attributed the increase to scarcity of water, carelessness about sinks or mud-holes near the wells.
6. Twenty cases.
7. September and October.
8. Answered in No. 5.
9. None.
14. None.
20. October.
21. None more than usual.

HAMER.

REPLIES BY WM. RICHARDSON, M. D.

1. Yes.
2. Diphtheria, being contagious.
3. Greater.
4. Diphtheria and measles.
6. Very little.
7. February.
9. Twenty.
13. Yes, by all in the family being affected.
14. None.
15. No.
16. Not when known to be sick.
17. No.
18. I can't tell.
19. All over the community.
20. November.
21. No.

OAKWOOD.

REPLIES BY A. C. SHERRARD, M. D.

1 and 2. Within the year named we have had an epidemic of diphtheria and measles.
3. The amount of sickness was greater within the past year.
4. Typhoid fever and pernicious malarial fever were more than usually present.
5. I attribute the unusual prevalence to dry, hot weather, in consequence of which the wells, mostly shallow, became lower than low water mark of the Auglaize river, which runs through the town.
6. Typhoid fever prevailed to a greater extent than for three years previous, but did not appear to be epidemic, but rather endemic—most cases occurring near the river.
7. Greatest number of cases in September.
8. As above stated, the conditions favoring its development were a semi-stagnated condition of river water and shallow wells.
9. About twenty-two cases of diphtheria occurred within the year.
10. At the beginning it was very severe; ulceration of throat extensive; six of the twenty-two cases died; no sequelæ of importance followed in those that survived.
11. The first case occurred here in a very filthy house, where occupants had not been from home.
12. Sanitary condition of all the houses except two was very bad.
13. In every case that I treated (15) it was

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

SPAULDING COUNTY—Continued.

either contracted by attending funerals or entering the house of another case. In one instance parents took their children fifteen miles to attend the funeral of a relative who had died of diphtheria; seven days after their return home, both children were taken down with the most violent form of the disease.

14. Only one case of scarlet fever, which occurred in this way: Mrs. D., mother of two children, visited in Washington, D. C., with one child; while there the child had scarlet fever; thirty days after the attack, when considered convalescent, she brought the child home. In six days afterward the one at home was taken with the same disease.

15. Yes.
16. No.
17. Yes.
18. Where practiced, isolation was very successful in limiting the spreading of both diphtheria and scarlet fever.
19. We are at present having a very general epidemic of measles.
20. October and November.
21. No.

PAULDING.

REPLIES BY P. ALVIN DIX, M. D.

During the past year our town and surrounding country has been visited with an epidemic of measles; and in this vicinity, within a radius of ten miles, I suppose there have been about five or six hundred cases. Also during past year there have been nearly one hundred cases of scarlet fever, together with from one hundred to one hundred and fifty cases in adjacent country. Measles were more general during August, September and October, and more severe in the month of October.

Scarlet fever prevailed during the early months of spring, and run through summer and early fall; the most cases were during May and June. There were but few deaths from either disease in Paulding village; only one from scarlet fever, and about twenty-five cases proved fatal in the surrounding country from the same disease; and probably six or eight cases of measles proved fatal.

Our general health as a community was more sickly than for several years past. The more prevalent diseases are noted in order as follows; Measles, scarlet fever, intermittent fever, remittent fever, diarrhœa, cholera infantum, typho-malarial fever.

The most notable cause of the greater amount of sickness, was the exceedingly dry season experienced here, together with a lack of good, pure water. The greater cause being the using of impure water; and the only remedy will be to have more good, pure water. To get this, wells will have to be dug deeper, and surface water kept from flowing therein.

There has been no case of typhoid fever in Paulding the past year, to my knowledge, and no diphtheria during the year.

In scarlet fever all kinds of means were practiced here. Some families were isolated, and disinfection practiced to the fullest extent, and with good results generally attending same, while in some places in the country children attended school, church, etc., and the disease was carried from family to family thereby; and some whole communities were afflicted, and almost every family (where children) took the fever.

In measles, the only thing done to check its progress has been to close some of the schools in the country, and to keep away from those known to have it.

PERRY COUNTY.

JUNCTION CITY.

REPLIES BY P. A. GORDON, M.D.

1. Had an endemic of typhoid.
2. It was confined to a mining village of 200 inhabitants.
3. About the same, except as above stated.
6. Four or five cases in our immediate vicinity.
7. October.
9. None.
14. One case.
15. Isolation.
16. No.

The endemic of typhoid fever in a mining town, seven miles from here, was no respecter of families. It attacked the most lowly and poor, and the well-to-do just the same.

The dwelling houses are built on a hill-side. Most of the privy-vaults are above them. The wells where they get water for drinking and cooking are dug near the dwelling, so that drainage, if there be any from the vaults, is directly towards the wells. However, the vaults are 200 or 300 feet above.

At the beginning of the sickness, the water in the wells was very low, and this continued during the month of October, and up to the present time (November 19).

Those who used every precaution in the way of cleanliness, and by using no water from the wells of the town were not afflicted; yet, even those who would but occasionally take a drink of the water in the wells of the town, became victims of the fever.

Another fact, probably worth mentioning, is that each fall for the last six years there has been more or less typhoid in this town.

SOMERSET.

REPLIES BY ROBERT W. WOODWARD, M.D.

1. No.
3. Average.
4. None.
6. Only two cases.
7. September.
8. Unknown.
9. Fifty.
10. Cases non-malignant.
12. Good.
13. No.
14. None.
15. No.
16. Yes.
17. No deaths.
19. Quite a number of cases.
20. Last winter.
21. No.

THORNVILLE.

REPLIES BY G. W. CLEMSON, M.D.

1. Whooping cough.
2. The entire locality, or township, rather; no special features.
3. About the same as previous years.
4. Fevers.
5. Possibly to scarcity of water and atmospheric conditions.
6. Some cases of typhoid fever, but mostly of a typho-malarial type.
7. August, September and October.
8. Weather extremely hot and dry, with scarcely any rainfall in the months named, producing great scarcity of water in wells and cisterns; the roads remarkably dry and dusty, and vegetation decayed and withered, were some of the conditions that seemed to favor its developement.

No cases of diphtheria, measles or scarlet fever.

PICKAWAY COUNTY—Continued.

ASHVILLE.

REPLIES BY D. H. SQUIRE, M.D.

1. No.
3. Less.
4. Malarial.
5. Dry weather.
6. Small.
9. None.
14. None.
19. None.

COMMERCIAL POINT.

REPLIES BY SAMUEL C. HELMICK, M.D.

1. No.
3. Less.
4. Malarial fevers.
5. No.
6. A few cases.
7. Autumn months.
8. Impure water and decaying vegetation.
9. Six cases.
10. Mild.
12. Poor.
13. It went through a family of four children, taking them one after another.
14. None.
15. No.
16. No.
17. No.
19. Mildly.
20. In spring months.
21. No.

NEW HOLLAND.

REPLIES BY JOHN B. MAY, M.D.

1. No.
3. About the same.
4. Prostration.
6. Four or five cases.
7. August and September.
9. Twenty.
10. Moderate.
14. No cases.
15. Yes.
16. No.
19. No cases to my knowledge.

I have traced a few cases of diphtheria to poorly cleaned and badly ventilated cellars. Every precaution was used to prevent spread by contagion with perfect success.

We have had quite a number of cases of malarial fever of a typhoid type, lasting from twenty to thirty days. No fatal cases. There has not been a tendency to malignancy in any diseases occurring this year.

TARLTON.

REPLIES BY JOHN J. BAKER, M. D.

1. No.
3. Less.
4. Diarrhœa.
5. Warm weather.
6. Six cases.
7. August and September
8. Bad water.
9. Ten cases.
10. Mild.
11. None.
12. Good.
13. None.
14. No cases.
19. Limited.
20. April and May.
21. No.

WILLIAMSPORT.

REPLIES BY T. C. TIPTON, M. D

1. No.
3. Average.
4. None.
6. But few cases.
7. September and October.
8. Nothing special.
9. Six or eight.
10. Mild form.
11. Exposure to cold.
12. Good.
13. Yes.
14. Very few cases.
15. Both; in cases treated by myself.
16. No.
17. No.
18. Effectually suppressed it.
19. But few cases.
20. April.
21. No special effort.

Remarks.—The only cases of diphtheria, of well-marked form, were two children in same family, occurring two weeks after they, with their mother, attended funeral of a relative in Ross county, Ohio. Yet the children were not at the funeral, but were left with another relative near by, where there had been no evidence of the disease.

PIKE COUNTY.

CYNTHIANA.

REPLIES BY J. W. LITTLE, M. D.

1. No.
3. Less.
6. Have had none.
9. Fifteen.
10. Very mild form.
12. Moderately good.
13. I think not.
14. No cases in the neighborhood.
15. Disinfection mostly.
16. No.
18. Where the measures were used did not spread.

We have had the most healthy year in this locality that ever I knew. I have been practicing here for six years, and I never found as little sickness as I have in the past year; have had no epidemic of any kind. What few cases of diphtheria I have had have been of a very mild form, and have occurred mostly in the country, and have been pretty much scattered around, not more than one or two cases occurring in a neighborhood.

FLAT.

REPLIES BY JOHN S. SAMSON, M. D.

1. No general epidemic has occurred.
3. It has been less than ordinary.
4. Tonsilitis in its mildest to its most aggravated forms, and malarial.
5. Nothing discernible as to its origin.
6. To a considerable extent in the form of typho-malarial fever, but not disastrous as a rule.
7. In August and September.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

PIKE COUNTY—Continued.

8. Specifically malarial.
9. Not more than eight or ten to my knowledge.
10. Appeared to result from aggravated forms of tonsilitis.
12. Mostly ill-ventilation, and want of proper cleanliness.
13. No.
14. Has been totally absent except a few cases of mild scarlet rash.
15. They were, as far as practicable.
16. Not as a general thing.
17. They were as far as my knowledge extends.
18. Proper rules were given and observed to keep children from minglihg with the public generally.
19. To no extent.

At present in this locality there is considerable pneumonia, from simple to typhoid pneumonia, attributed measurably to the extreme warmth and dampness at the present time of the year.

OMEGA.

RELPIES BY J. B. RAY, M. D.

1. Yes.
2. Diphtheria, twelve bad cases; many slight; no deaths; cause, filthy hog pens and privies.
4. The cases above mentioned.
5. They were removed when I called their attention to the cause, and there were no more cases.
6. No case came under my care.
9. Probably fifty cases altogether, slight and bad.
11. Cause as above stated.
12. Not good.
13. Yes; I should like to answer this question fully, but have not time now, and if I put this off till another day, it may never be answered.
14. No cases in a territory of ten miles.
16. No.
17. Yes; in one case of diphtheria; not of my patients.
18. Removing the cause, and keeping the sick secluded from the well, put an end to the epidemic in two weeks.
19.. None.

PIKETON.

REPLIES BY W. R. HURST, M. D.

1. Yes.
2. Roetheln or scarlet fever.
3. Less.
4. Roethlen.
5. Cannot say.
6. None; we had bilious remittent fevers.
9. Twenty-two cases.
10. Mild.
11. None.
12. Good.
13. No; it seemed to be epidemic.
14. Extensive with roetheln.
15. No.
16. Yes.
17. Yes.
18. It seemed to have no effect.
19. None.

Remarks.—When the roetheln was severe, it seemed to be malignant scarlet fever. Some cases in the same family would be very light; quite a number of isolated cases, but one in a family of five or six would have it.

WAVERLY.

REPLIES BY AUSTIN HUTT, M.D.

1. No.
3. About the same.
4. Typho-malarial fever.
5. Special causes have not been ascertained, nevertheless, they must exist for the fever was principally onfined to one quarter of the town. In one family, remote from the above locality, it is possible that over-crowding was a factor, for the house was small and the family large, and the locality healthy in the past.
6. Only a few isolated cases.
9. Twenty-five, approximating.
10. Mild.
11. The prevalence of the disease here during the past year must be regarded as a continuation of the epidemic of last year, the origin of which is obscure.
12. In some, it was good; in others, it could have been much better.
13. A child died of diphtheria; a dress that it wore was washed—not boiled—and put away. Almost a year subsequently, this garment was again brought into use, and worn by a younger child of the same family. In four or five days thereafter, this child became petulent, had fever, and the day following diphtheria was diagnosticated. The disease had not been in this family for over eleven months, and this child had not been exposed to other cases.
14. Entire absence.
15. Patients with diphtheria were isolated where it could be done successfully, but where large families resided in small houses, it was difficult to isolate patients, and in many instances it was not attempted. Disinfection was not practiced in all cases.
16. They were not permitted to attend school, otherwise ran at large.
17. Yes; but children were not permitted to attend.
19. None at all.

PORTAGE COUNTY.

ATWATER.

REPLIES BY E. WARRINGTON, M.D.

1. No.
3. About same as previous years.
4. Lung diseases.
5. Cold, and snow at unusual time.
6. Not any.
9. Few.
10. Light; one death.
13. It was light, sporadic.
14. Very little.
15. None, that I knew of.
16. I think they were.
17. Yes.
18. There are some doubts that it was diphtheria.
19. Very little.
20. Early in the spring.
21. I think not.

I think, the long cold winter gave the character to the sickness; the snow lay on the ground some weeks.

FREEDOM STATION.

REPLIES BY SETH L. SLOAN, M. D.

1. Yes.
2. Measles.
3. About the same for the past four years

PORTAGE COUNTY—Continued.

4. Had none.
6. No cases.
9. No cases.
14. Only one case.
15. No.
16. No.
17. No death.
19. There were probably one hundred cases.
20. February and March.
21. No.

PALMYRA.

REPLIES BY W. G. SMITH, M. D.

1. A general epidemic of measles is all.
2. Every one who had not previously had them took them now.
3. About the same.
4. Measles and dysentery.
5. I think scant and impure water supply caused dysentery to some extent.
6. Five cases.
7. November, December, October.
9. None.
14. Not one case.
19. General epidemic.
20. February, March and April.
21. Houses where the disease was were not visited by those that had not had the disease.

Remarks.—The greatest number of cases of dysentery and diarrhœa occurred in a locality where the water was very bad and hard to get. Two years ago had a general epidemic of diphtheria, and since then complete immunity from the disease. There has been but three or four cases of scarlatina here in ten years. Our community is regarded as a very healthy place.

ROOTSTOWN.

REPLIES BY A. M. POWERS, M. D.

1. Measles only.
2. This disease prevailed throughout the county, especially the south-east part; its nature very mild.
3. Less than usual.
4. Diseases of children.
6. Limited.
7. July and August.
9. Very few.
10. Mild.
12. Good.
13. No.
14. Limited.
15. Yes.
16. No.
19. As an epidemic.
20. March, April and May.
21. None.

SHALERSVILLE.

REPLIES BY G. M. PROCTOR, M. D.

1. No.
3. Less.
4. Pneumonia.
5. No.
6. Three or four cases.
7. June.
8. Bad cellars.
9. Ten.
10. Malignant.
12. Bad.
13. No.
14. None.
15. Yes.
16. Yes.
17. Yes.
18. Confined to one-fourth the township.
19. None.

Remarks.—I am right on the dividing ridge between the Ohio River and Lake Erie. The health of my section for the past two years has been good. My cases of typhoid fever have been isolated cases here and there. Malarial cases are the most I have to treat. We had in August and September a few cases of dysentery; no cholera infantum.

PREBLE COUNTY.

CAMDEN.

REPLIES BY W. W. CANNY, M. D.

1. Yes.
2. Both scarlet fever and measles, and both unusually severe.
3. Aside from epidemics of scarlet fever and measles, about the same.
4. Scarlet fever and measles.
5. Can not attribute them to any special cause.
6. But few cases.
7. August and September.
8. Nothing.
9. Five or six.
10. Mild.
11. None.
12. Fair.
13. None that I am aware of.
14. About thirty cases—40 per cent. fatal.
15. To a limited extent.
16. No; public schools closed from February till close of year.
17. No.
18. Can not tell to what extent, but doubtless did much to limit epidemic.
19. One hundred cases.
20. In February and March.
21. Only by closing school.

EATON.

REPLIES BY A. A. LOVETT, M. D.

1 and 2. Measles and whooping-cough were epidemic during the spring months. Measles were complicated with roetheln or scarlet rash, the latter frequently preceding or following the measles.
3. About same as preceding year.
4. None further than answered in No. 1.
6. In my experience, less than former years.
9. No diphtheria. There has been no true diphtheria in this locality for nine years to my knowledge. Many cases of diphtheritic sore throat are pronounced true diphtheria, I think, through error.
14. Sporadic cases only, and very light.
19. Several hundred cases.
20. March, April and May.
21. None in particular. They were light in character, and were not much avoided.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

PREBLE COUNTY—Continued.

EBENEZER.

REPLIES BY HAWLEY & HAWLEY, M. D.'S.

1. No.
3. Less.
4. Typhoid fever and diarrhœl troubles.
6. Limited.
7. January and February.
8. Nothing observable.
9. None.
14. Was none.
19. Had no measles.

The general health in this part of Ohio has been remarkably good the past season; the best that I remember during a period of observation of over forty years.

August furnished the greatest number of diarrhœal and dysenteric cases, which were mostly confined to children, but those cases were readily controled by proper treatment.

We have been exempt from scarlet fever, diphtheria and measles.

While typhoid fever has prevailed to an alarming extent in the southern part of Ohio, there has been less during the past three months in this locality than there was during the corresponding dates of last year.

In comparing the rain-fall of last year with the present, we find that the excess was greatly in favor of the former; hence wells and surface water was much more abundant than it is at the present time.

Localities which furnished a sufficient supply for stock and domestic water from wells last year, had an unusual number of typhoid fever cases of a grave character, proving fatal in nearly double the number of ordinary typhoid cases; whereas, in the same localities for three months past, the majority of inhabitants of the same farms in the identical localities where typhoid fever prevailed last year, have been hauling water from any available place for house and stock use. Surface water and every available pool of water has been exhausted to the dregs, and yet not a single case of typhoid has occurred the past fall in that particular locality, of which we have heard. So we learn from observation that the last year, with its superabundant rainfall, was much more productive of typhoid cases in the above-named locality, than the present unprecedentedly dry one.

We believe that wells fed by strong veins of water, free from surface water, *do not* produce typhoid fever. But it is those wells which are supplied by surface drainage, and lower rapidly when dry weather occurs, and ultimately fail.

WEST ELKTON.

REPLIES BY A. W. HONARROE, M. D.

1. Yes.
3. Less.
4. Measles.
6. None.
9. None.
14. No scarlatina.
19. About one hundred cases.
20. February and March.
21. Everybody avoided the disease as long as possible.

The year ending October 31, 1887, with the exception of measles during the months of February and March, was one of unusual health in this locality.

The malarial fever, which prevails in this section generally during the fall months, did not exist in the past year, save in a few isolated cases, owing, I suppose, to the drouth and small amount of vegetation.

In the measles epidemic the virus seemed to be extremely virulent; the eruption developed very slowly, in some cases not being fully developed until the eighth day; the temperature running very high (105° and 105½°) in some of the cases; complications of a serious nature arising in only a few cases.

WEST MANCHESTER.

REPLIES BY J. E. F. HORN, M. D.

1. Three mild epidemics.
2. Whooping cough, dysentery and influenza. The epidemic of whooping cough was rather mild, and generally uncomplicated; out of about twenty cases prescribed for by myself, only three had any serious bronchial trouble as a complication, and they finally recovered after a time. Influenza prevailed during December of 1886, and January and February of this year. It was not of extreme severity, but affected a great number. Think I must have prescribed for over one hundred different patients with that trouble. Dysentery was more frequent during the hot months, but it prevailed here to an unusual extent: sufficient to be considered as an epidemic. The aged especially were attacked, and it seemed to be pretty severe.
3. I believe, generally speaking, we had rather a less amount of sickness than usual.
4. Those mentioned above.
5. I cannot mention any special cause for the frequency of these diseases, unless the hot and extremely dry weather had something to do with the production of dysentery. They certainly aid as factors in the process of fermentation, and if we accept the theory of "Bacterial origin" of this disease, we will have to admit that extreme hot weather must be taken into account, but is in no way removable.
6. To a very limited extent; I only had three cases.
7. August and September.
8. Can mention no special causes for its development.
9. About ten cases.
10. Generally rather mild.
11. Can give no definite facts.
12. The sanitary condition was generally pretty fair; the cases were all in the country, but in a few instances the sanitary conditions were not of the very best, both as regards cleanliness of person, and within and about the dwellings.
13. There was no conclusive proof of contagion; a family of four children had the disease, as claimed by Dr. ——, who attended them; a neighboring mother, with her three children, visited them while sick, and in about six days the three latter children had diphtheria, in rather a mild form, but undoubtedly diphtheria. While this family was sick there came in another neighbor boy about seven years of age, and in five days he had diphtheria in a light form; recovered completely in about six days from the time he was first taken.
14. Was no scarlet fever in this immediate neighborhood.
15. Only in part.
16. They were not permitted to attend school until they were thought to be well.
17. There was one public funeral that I know of.
18. I had but one chance in the past year to isolate patients with diphtheria, and that instance was attended with good results. In a family of five children, two were taken sick near the same hour; they were soon placed in a room to themselves, and after they were well, the room was thoroughly disinfected,

PREBLE COUNTY—Continued.

and the whole house more or less so, with the result of no others taking the disease.

19 I did not have a case; know of none having been in this neighborhood.

WEST SONORA.

REPLIES BY C. SURFACE, M. D.

1. None.
3. Same as for last five years.
4. None.
6. None.
9. Ten.
10. Mild.
11. None.
12. Good.
13. They did not.
14. None.
15. Yes.
16. In some instances.
17. Had no deaths.
18. Don't know that they limited disease.
19. None.

Our good health is chiefly owing to our thorough system of tile drainage.

PUTNAM COUNTY.

COLUMBUS GROVE.

REPLIES BY JOSEPH MORRIS, M.D.

1. No.
3. About the same.
6. Moderate.
7. October.
8. Drouth.
9. About thirty that were suspicious.
10. Mild.
12. Good.
13. Parties taking the disease after being exposed to others sick with the same.
14. Only a very few cases.
15. Yes.
16. No.
17. No deaths during the year.
18. They were comparatively successful.
19. Only in five or six families.
20. January and March.
21. Yes.

FORT JENNINGS.

REPLIES BY ADOLPH STEINHOFF, M.D.

1. No.
3. Less.
4. None.
6. Not one case.
9. None.
14. There was no case.
19. There was no case.

LEIPSIC.

REPLIES BY JOHN C. M'CLUNG, M.D.

1. No.
3. But little, if any difference from four years.
6. Five cases; a few cases since October 1, 1887.
8. Could discover none.
9. But few.
12. Good.
13. No.
14. None.
16. No.
17. Yes; one.
19. None.

For the last eight years sickness here has been diminishing rapidly, and to a surprising extent. I attribute this to the fact that underground drainage has been pushed with great vigor. Seven tile factories are now in operation in the vicinity of this place where two years ago there were none; also, to the fact that our soil which is of an alluvial character has become "sun-cured," so that there is now as little sickness here of a malarial character as there is in almost any other locality in the country. The development of the country has reached a stage that exempts the inhabitants almost entirely from such diseases as are peculiar to a new country. The buildings are nearly all new, and the locality is not subject to the diseases which prevail in older settled places; so that while this country is healthier now that it ever has been, it is probably also healthier than it will be in the not very far future. About the 31st of October, 1886, we had here a few cases of diphtheria, perhaps a dozen in all; two of a malignant kind, and one died.

During October, 1887, a few cases of continued fever; it is still prevailing to a slight extent; more like a mild typhoid than anything else. Duration, 21 days; then becoming intermittent. The cases have not been controllable by quinine or the remedies so effective in malarial fevers until the intermittent character obtained. All the cases I have seen had the characteristic eruption of typhoid fever. I can only assign the excessively hot and dry season which we have passed through as the cause. With but one exception, there has been but one case in a family. No deaths.

MILLER CITY.

REPLIES BY LEWIS E. DEUBLE, M. D.

3. About the same as last year.
4. Malarial fever.
5. To the drouth.
6. There were a few cases.
7. In August and September.
8. To the dry weather, as this country is very flat and wild. It was of a mild form.
9. There were about ten.
10. It was, as a rule, mild; one death.
11. Do not know of any.
12. Not very much, but seemed to be general, for there was a great deal of sore throat.
14. Did not have any.
15. Not any.
16. Some of them.
17. Was, to some extent, public, but not well attended.
19. Had a few cases—sporadic.
20. In April and May.
21. Visitors were excluded.

Had a good many cases of cholera infantum, with a few deaths.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

RICHLAND COUNTY.

BELLVILLE.

REPLIES BY S. P. DYER, M. D.

1. Catarrhal fever in September.
2. We had a cold wave; catarrhal fever followed it; not fatal.
3. Less.
4. Catarrhal fever.
5. Change from heat to cold.
7. September.
8. Cold.
9. Twenty.
10, Catarrhal form.
12. The houses small and filthy.
14. Scarlet fever slight; no deaths caused by it.
16. No.
19. About twelve patients.
20. March.
21. Yes; those that were exposed were kept at home.

Our village is well cleaned.

BUTLER.

REPLIES BY O. A. HUBBS, M. D.

1. No.
3. About same as previous year.
4. Typho-malarial fever.
7. March and April.
9. None.
12. Good.
13. Yes; see opposite page.
14. None.
15. Not until after death of two persons.
16. No.
17. Yes.
18. No cases after disease was thoroughly understood.
19. None.

We had, I think eight cases of diphtheria at Newville, four miles north of this place, last November, of very malignant type; cause, young lady who had been living near Mansfield visited at the place just after having had disease, and slept with a child, who was first infected. Two cases died.

DARLINGTON.

REPLIES BY D. M. S. SINGREY, M. D.

1. Yes.
2. Scarlatina in the early spring season, and typhoid in December.
6. Is prevailing.
7. December.
8. Drouth.
9. Ten cases.
12. Good.
15. Yes; in every case I attended.
16. No.
17. Yes.
18. Successful in general.
19. Quite extensive.
20. March and April.
21. Yes.

LEXINGTON.

REPLIES BY H. H. SMITH, M. D.

1. No.
3. Less.
4. Nothing special.
6. Two cases, and both were fatal.
9. None.
14. Two cases in the country in same family.
15. Yes.
16. No.
17. Yes.
19. None.

Remarks.—The two cases of typhoid fever occurred in the same family, in the month of February, and were perhaps the result of filth in the cellar of residence. This I regard as a fruitful cause of disease, both in towns and country. The general health of our village and neighborhood has been exceptionally good during the past year. If anything of importance occurs I will inform you at once, and take whatever steps your Honorable Body may direct.

MANSFIELD.

REPLIES BY R HARVEY REED, M. D., H. O.

1. No.
3. Less.
4. None in particular.
6. Practically none.
7. August and September.
8. Bad water usually.
9. Don't know.
10. Mild form.
12. Some good and others bad.
13. Suspicious, but not absolute.
14. Very little.
15. Not all.
16. No.
17. Generally.
18. Am unable to tell accurately.
19. To a moderate extent.
20. No special time.
21. Nothing special.

LUCAS.

REPLIES BY R. S. BOLES, M. D.

1. No.
3. Less.
6. But few cases.
7. October.
8. Scarcity of pure and use of impure water.
9. Fifty cases.
10. Generally mild.
11. Malaria.
12. Some very good.
13. None whatever.
14. None.
15. No.
16. Yes.
17. Yes.
18. Never have found them to limit the disease.
19. No.

PAVONIA.

REPLIES BY GEO. P. SATTLER, M. D.

1. Yes.
2. Scarlatina—fourteen families in school district.
3. Less.
4. Scarlatina.
5. Neglect of physicians and ignorance.
6. None.
9. None.
14. Fourteen families, one-third in school district.
15. No.
16. Yes.
17. No death.
19. Very few cases.
20. Winter months.
21. Yes.

Remarks.—The first two cases of scarlatina in our town were seen by a physician who pronounced it "only a little scarlet rash." They were sent to school, where they were seen to pick off from their fingers the desquamation. Consequence was, a rapid spread among scholars. I treated a few very severe cases of cholera infantum. No medication proved of any avail. We had a very dry and hot summer. There is scarcely any one sick at present

RICHLAND COUNTY—Continued.

SHELBY.

REPLIES BY M. H. HUSS, M. D.

1. Measles.
3. About the same.
4. Pneumonia.
5. No.
6. A few cases.
7. August and September.
8. Continual hot weather.
9. No case of pronounced diphtheria.
14. None.
19. To quite an extent.
20. The hot season—July, August, and part of September.
21. No.

Malaria used to be the cause of very much sickness in Shelby and vicinity until about twelve years ago; from that time sickness has been gradually decreasing in the same proportion as tiling and drainage has been practiced, so that we may say for the last eight years all malarial influence upon the health of our population has entirely ceased, and a perfect state of health resulted. During that time of malarial influence a changeable weather appeared very unhealthy.

During the latter eight years a comparatively long period of extremely cold or extremely hot weather caused an unhealthy state, while the changeable weather seemed to be the most favorable kind for the preservation of health.

ROSS COUNTY.

ADELPHI.

REPLIES BY N. POTTER, M.D.

All the physicians in this locality except one, have kindly furnished me the records in their cases; in the exceptional case, I have made due inquiry, and have obtained the desired information so far as it could be ascertained from the other practitioners.

Typhoid fever.—September and October, 1886, 10 cases; September, 1887, 16 cases; October, 32 cases. Deaths, 2.

Dysentery.—August, 1887, 15 cases; September, 115 cases; October, 18; total, 148. Deaths, 17.

Measles.—Twenty-two cases reported.

Dr. W. S. Bunn furnished the following statement of an epidemic of typhoid fever in Salt Creek Township, Pickaway county: "In the fall of 1886, there being no other cases in the range of our practice, and none having occurred in that locality since 1878, there were ten cases within the radius of a mile, occurring in five different houses, each having and using their own well. In one family of six, four were affected; in two other instances, man and wife were successively affected. In the treatment of these cases, the discharges were strictly disinfected with sulphate of iron and hydrochloric acid, then buried. This was continued until the patient had left his or her bed.

This fall, in the same locality, but in different houses, except two, there were six cases. In the house where four patients were affected in 1886, two out of another family of four occupying the same house this fall were affected; they used the water from the well on the premises up to the time of their sickness, when it was discontinued. In the other instance, the houses where man and wife had been affected last year, presented this fall one case.

BAINBRIDGE.

REPLIES BY R. H. M'KEE, M.D.

1. No.
3. About the same.
4. Diarrhœa and dysentery.
5. No.
6. None.
9. Twelve.
10. All were mild, sporadic cases.
12. Usually bad.
13. No.
14. None.
15. No.
16. Yes.
17. Yes.
19. None.

GILLESPIEVILLE.

REPLIES BY J. M. WILTSHIRE, M.D.

1. No.
3. Less.
4. None.
6. No cases.
9. Five.
10. Mild.
11. Not known.
12. Good.
13. No.
14. No cases.
15. No.
16. No.
17. No fatal cases.
19. No cases.

HALLSVILLE.

REPLIES BY WM. R. GILDERSLEVE, M.D.

1. There was an epidemic of diphtheria; pneumonia prevailed during the winter months, and dysentery during the summer months, up to August, 1887.

2. It was in the village, and beyond the locality of my practice.

3. The amount was greater than last year.

4. Diphtheria and pneumonia.

6. There was no typhoid fever during the year.

8. No conditions, and there was no fever.

9. There was, in my practice, seventy-three cases.

10. General character of the disease were mild.

11. The origin of the disease was vicissitudes of weather.

12. Sanitary condition of the houses was good.

13. There did not seem to be any contagion or infection.

14. Had no scarlet fever.

15. Used disinfectants in houses that had diphtheria.

16. Not all of them; some did, however.

17. Yes.

18. Did not regard this as wrong.

19. Had no measles.

21. None whatever.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 4 and 35 of this Report.

ROSS COUNTY—Continued.

SOUTH SALEM.

REPLIES BY W. E. PRICER, M. D.

1. Yes.
2. Remittent and typhoid fever.
4. (See 2).
5. Mostly low water in wells.
7. August, September and October.
9. Forty.
10. Malignant.
12. Bad.
15. In some, but generally not.
16. At first, but later was stopped.
17. Yes.
19. Seventy-five or eighty cases.
20. February, March and April, 1886.
21. No.

WALLER.

REPLIES BY C. C. RILEY, M. D.

There has been no epidemic in my town or locality ending with October 31, 1887. The amount of sickness during the past year indicated has been greater. Malarial diseases were the most prevalent, the remittent type predominating. In former years the intermittent type predominated. I can not attribute this unusual prevalence to any special cause. Have not had a case of typhoid fever in my field of practice during the year. Have had but one case of diphtheria. It did not assume any special characteristics. No special causes known as to its communication. The sanitary condition of the house was good, far above the average. Isolation and disinfection were practiced very carefully in this case of diphtheria. No children from this famly permitted to attend school. The funeral of this diphtheritic patient almost strictly private. Diphtheria did not appear in another family in this locality. I attribute this to the isolation and disinfection practiced. No scarlet fever during the year. Had measles in but one family. It prevailed in the month of April. All precautions were taken to limit its spreading.

YELLOW BUD.

REPLIES BY W. F. HUGHEY, M. D.

1. We are just now suffering in this vicinity with what I am pleased to call an epidemic of "Tonsillitis" in a rather severe form, there being, in most cases, a marked constitutional disturbance, with a severe local manifestation.
4. Malarial diseases prevailed.
5. Yes, we think they were due to the excessive dry weather.
6. None; rarely have the disease here.
9. Not to exceed four or five cases of diphtheria.
10. All mild save one, which was rather malignant in its character.
11. The cases occurred in houses where the disease had manifested itself before.
12. Sanitary condition good.
13. Yes, in this, that the disease had been in these houses before.
14. None.
19. Quite general throughout my district.
20. March, April and May.
21. The usual precautions of keeping parties from those sick of measles.

SANDUSKY COUNTY.

FREMONT.

REPLIES BY J. D. BEMIS, M. D.

1. No.
3. About same since '79.
4. Measles.
5. No.
6. So far as I am able to ascertain, there were five cases of typhoid fever. Many other cases were reported as such, but investigation shows that they were "pernicious intermittent" in most instances, and recovering in from 10 to 24 days. I think if physicians were compelled to register the deaths from typhoid for one year with the Probate Judge there would be a falling off of at least 50 per cent. of the cases as now reported throughout the State.
7. April, May, September and October.
8. Conditions favorable to malaria.
9. We had no diphtheria since '79.
14. Do not know of a case.
19. I think there were about fifty cases in the city, with no deaths. We have had no epidemic since '79, at which time (August, September and October) we had many deaths from diphtheria. Since this city established thorough drainage from all sections, emptying all sewage into the river, and flushing all sewers with an abundance of water, also furnishing the best of water, which is universally used for all purposes, we have but little sickness from causes usually ascribed to unsanitary surroundings.
20. April, May and June.

SENECA COUNTY.

GREEN SPRING.

REPLIES BY JOHN S. MARSHALL, M.D.

6. Three cases.
7. September.
8. Low water, and scarcity of same.
10. None.
14. None.
19. None to my knowledge.

NEW RIEGEL.

REPLIES BY WM. H. FOCHT, M.D.

1. None.
3. About the same.
4. Pneumonia and bronchial troubles.
5. Sudden changes of temperature.
6. Fewer cases than other years.
7. August and September.
8. Bad sanitary surroundings, and scarcity of water.
9. Twenty.
10. Contagious; located mostly in the pharynx.
12. Unclean and damp cellars in most cases.
13. Some cases were highly contagious; members who came in contact, seemingly healthy at the time, were taken with it.
14. Not one case in the entire neighborhood.
15. Not in all cases.
16. No.
17. Yes; in one case of diphtheria.
18. Where complete disinfection and isolation could be procured, it limited the spread of the disease.
19. We had no measles this year.

There were four cases of membranous croup; all proved fatal. Intubation and tracheotomy were not resorted to, as I could not get the consent of the parents. The ages were from one to two years old.

SENECA COUNTY—Continued.

WEST LODI.

REPLIES BY A. D. BOWEN, M.D.

1. Yes; measles; though not to a great extent; of a mild form; only twenty cases were reported in this vicinity; one fatal.

3. The amount of sickness was considerably less than for previous years.

4. Bowel troubles chiefly during the summer, and among children; remittent fevers, and the usual amount of colds; bronchitis, etc.

6. Only a few isolated cases of typhoid fever in this vicinity, as we had a dry spring and summer.

7. April, September and October.

8. Persons living in poor houses; during the fall there was a scarcity of water, and, I think, using impure water was the cause.

9. We had no diphtheria.

14. Only to a small extent, and of a mild form.

15. Yes.

16. No.

17. No.

18. In this vicinity we kept scarlet fever from spreading by those measures.

19. Only to a slight extent.

20. February, March and April.

21. No; as it was of a mild form, only such as were suffering from some other disease were kept away.

Of other diseases there occurred nothing special. One case of true membranous croup; fatal.

SHELBY COUNTY.

ANNA.

REPLIES BY E. A. STEELY, M.D.

1 and 2. The only epidemic influence was a mild off-shoot of the more serious diphtheria of Logan county, in the fall and winter of 1886. The disease was milder as the numerous cases were farther removed from the center of severity, and subsided accordingly as the center influences abated. No cases occurred west of this place, twenty miles from the Logan county center, and few cases were reported that had membranes for a certainty, while some are open to suspicion as to diagnosis; in this connection, it might be stated that I have knowledge of one fatal case of true croup in the midst of the epidemic.

3. About the same as in previous years.

4. None.

5. No.

6. Only one; imported by a visiting stranger in October last. Two cases were reported to the board subsequently, as reported to me, and by a medical man, but they recovered within two weeks.

9. The number cannot be stated, as implied in the answer above, and some mild cases were not actually treated.

11. Observations here would indicate a specific cause, and the requisite of the usual social intercourse for its spread.

12. Good.

13. Progress was from the center outwards, but not all persons exposed casually or even directly were sickened. Inquiries fail to show that any case occurred without exposure direct or remote.

14. None.

15. No.

16. Yes; but it is safe to infer that more care would have been used if the diphtheritic element had been more severe.

17. No.

19. A few mild cases.

20. February and March.

21. No; usual prudence.

BOTKINS.

REPLIES BY G. M. TATE, M. D.

1. No.

3. About the same.

4. Measles and typhoid fever.

5. No.

6. Small extent.

7. November and December, 1886, and October 1887.

8. Not to be perceived.

9. Two.

10. Very severe.

12. Good.

13. No.

14. None.

15. Yes.

16. No.

17. Yes; one case.

18. No extension.

19. Quite general.

20. April and May.

21. None but isolation.

HARDIN.

REPLIES BY A. W. GROSVENOR, M. D.

1. Yes.

2. Measles; 100 or more cases.

3. About the usual amount.

4. Malarial.

6. None.

10. Probably sporadic, as no cases followed.

14. None.

16. In case of measles no restrictions were placed upon it.

18. Yes.

19. One hundred or more.

20. March and April.

21. Every man for himself.

At Lockington, six miles south of here, there are several cases of typhoid fever; the first case was imported, and was probably favored by drought.

PORT JEFFERSON.

REPLIES BY S. S. CRUMBAUGH, M. D.

1. Yes; measles last April.

2. It was not fatal.

3. Not so great.

4. None.

6. None.

9. None.

14. Slight after isolated cases.

15. Yes.

16. No.

17. No.

18. To a certain extent; about three-fourths.

19. General.

20. Last April and May.

21. Yes.

SIDNEY.

REPLIES BY C. E JOHNSTON, M. D.

1. Measles prevailed as an epidemic here during the year.

2. In my own practice there were not less than one hundred cases, and in the village alone there were probably not less than six

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NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

SHELBY COUNTY—Continued.

hundred cases, nearly all of which required the services of a physician. Very few exposed persons, either youths or adults, escaped. Some cases were very severe, but taking into consideration the number of cases, deaths were not disproportionately large, there being, I think, no more than eight or ten deaths from the disease in the village and vicinity. Measles prevailed during March and April. The schools were not closed, the disease being so general that children were exposed everywhere.

The families affected by typhoid fever were isolated; in some cases it was readily traced to a cause. In one house, where both typhoid fever and diphtheria occurred, there was a blind-covered cess-pool some distance from the house, from which there was no ventilation, except back through the sewer into the kitchen. The history of this particular house, which was occupied by one of our best families, is very interesting, and I have requested the family physician to report it to you for publication, which he promised to do. The general health here is good. The surface drainage of our town is first-class, and the sanitary condition will compare favorably with other towns of the same population.

STARK COUNTY.

ALLIANCE.

REPLIES BY P. W. WELKER, M. D.

1. Yes.
2. Measles; general; three or four hundred cases; not malignant; death rate small; mortality, four or five.
3. Greater.
4. Measles and remittent and typhoid fevers.
5. The fever I attribute to a low water supply, removable by plenty of rain.
6. Some thirty or forty cases. Not as an epidemic.
7. August, September, and October.
8. Low water supply.
9. Three or four.
10. Mild.
11. Nothing known regarding origin.
12. Sanitary condition good.
13. No.
14. None.
15. Yes.
16. No.
17. No.
18. Only one member in family attacked.
19. Epidemic.
20. January, February, and March.
21. No.

BEACH CITY.

REPLIES BY DAVID CRISE, M. D.

1. No.
3. About the same.
4. Malarial.
6. No cases.
9. Fifteen to twenty.
10. Mild.
12. Fair.
13. No.
14. None.
15. Yes.
16. No.
19. Few cases.
20. October, 1887, and still prevails.
21. No.

CANTON.

REPLIES BY LEW. SLUSSOR, M. D.

1. Yes.
2. Measles, as near as the number of cases could be approximated, it was over 3,000. Nothing of special interest connected with its prevalence.
3. Increased slightly from measles.
4. Not any, except measles.
5. No.
6. There was only an occasional sporadic case.
7. But two cases reported; one in March; the other in October.
9. Not exceeding thirty, of which seventeen died, including cases reported membranous or diphtheritic croup.
10. The same as that described by writers on "Practice."
11. So far as known, it had a spontaneous origin.
12. Lack of proper ventilation; decaying vegetable matter in cellar.
13. In several families there were three and four cases in succession ,demonstrating beyond question its contagiousness. Cases in some families kept isolated escaped. It was noticeable that in many cases where there was a question as to its being diphtheria, diphtheritic or membranous croup, when *not* communicated, it was designated the latter. The indications for treatment in both were much alike.
14. It is not known that there was a single well marked case.
15. No.
16. Not school when the fact became known.
17. Yes; but under protest from the Board of Health.
18. Have not had experience sufficient to determine the question.
20. March and April.
21. Not in particular. Parents, as a rule were careful not to allow their children to be exposed; but the disease seemed to over-ride every barrier.

During the fall months diseases of a malarial type were more than usually prevalent. This was attributed to plowing up the streets, preparatory to paving—digging for gas and sewer pipe; but the mortality for the year 1887 will be as low as usual.

JUSTUS.

REPLIES BY W. C. PUTNAM, M. D.

1. Mild form of scarlatina.
2. About twenty cases.
3. About as usual.
4. Scarlet fever.
5. No.
6. None.
9. Fifteen or twenty.
10. Mild in form.
12. Not good.
13. No.
14. See above.
15. Disinfection but not isolation.
16. No.
17. Yes.
19. Forty or fifty cases.
20. January and February, 1886.
21. Closing of schools.

LAKE.

REPLIES BY F. B. RICHARDS, M. D.

1. No.
3. Less.
4. None.
6. No case.

STARK COUNTY—Continued.

9. Few.
10. Light.
12. Good.
14. No cases.
15. Yes.
16. No.
17. Yes.
19. A few cases.
20. Spring.
21. None.

MAPLETON.

REPLIES BY JAS. M'CONKEY, M. D.

1. Measles prevailed as an epidemic last winter in our town and neighborhood, but of a mild form; no deaths.

3. The amount of sickness about the same as previous years.

4. Pneumonia and acute rheumatism.

5. Sudden atmospheric changes from heat, to cold, and rainy weather.

6. No cases of typhoid fever during the year.

9. About one dozen cases of diphtheria.

10. All of a mild form; no complications and no deaths. It was of an epidemic character, and brought about by extreme cold last winter and sudden thaw.

12. Sanitary condition of houses, good.

13. Having broken out in our district school proves that it is contagious.

14. No cases of scarlet fever, but two mild cases last September; no deaths.

15. Patients were kept strictly apart, and houses and rooms disinfected.

16. Were not permitted to attend school or any public place, which prevented spread of disease.

19. Already answered above.

20. Measles prevailed in the months of January, February and March, 1887.

21. Strict sanitary measures were used to prevent its spread.

Health of our neighborhood at present good; a few cases of mild croup, owing to sudden change to cold, snowy weather.

MAGNOLIA.

REPLIES BY D. L. M'ILRAVY, M. D.

1. Measles.
2. Only a few cases up to date.
3. Greater.
4. Typhoid fever.
5. Bad water; removable.
6. Eight or nine cases.
7. August and September.
8. Mud holes, bad air and water.
9. None.
14. Had several cases; simple.
15. Yes; also in typhoid fever.
16. No.
17. Yes.
19. Not many cases.
20. May.
21. Yes.

MIDDLEBRANCH.

REPLIES BY B. F. YOHE, M. D.

1. No.

3. There was some more.

4. There was, during the months of January, February and March, more lung fever than the previous year, and more of catarrhal form. In July and August bowel complaints, with a great many with dysenteric symptoms, but not suffcient to call it an epidemic.

5. For the lung troubles I know of no cause except the the long cold and close winter, and long hot and dry summer producing the bowel trouble.

6. None.

9. There were but four, and they were of a mild character.

11. It seemed to be brought from another family, a member of this family being engaged as a domestic.

12. Good, but know nothing of the condition where it originated.

14. None.

15. They were.

17. No deaths.

19. Four cases.

20. August.

21. No precautions whatever, they being brought by visiting a neighboring town. The two that did the visiting and two others of a different family were all that took them, nevertheless plenty of children about.

There is generally, in this locality, much fever in the fall and spring, which is of a malarial nature.

There were three cases of diptheritic croup in this locality, originating and ending in the same family; All died; some of the children that were kept away from the room took it, while others that were allowed to go in the room did not.

OSNABURGH.

REPLIES BY JOSHUA WHITELEATHER, M. D.

1. No.
3. About the same.
4. Measles and diphtheria.
5. No special cause.
6. Only four cases.
7. September and October.
9. One hundred and thirty-six cases.
10. Malignant.
12. Fair.
14. None.
15. Yes.
16. No restraint.
17. Yes.
19. General extent.
20. March and April.
21. No.

PARIS.

REPLIES BY H. H. CHAMBERLAIN, M. D.

1. Yes; measles.
2. General lung complications.
3. Greater.
4. Measles and diphtheria.
5. No special.
6. Limited.
7. October.
8. Low water.
9. Twenty cases.
10. Malignant.
12. Good.
14. None.
15. Yes.
16. No.
17. No deaths.
19. Very great.
20. March and April.
21. Every precaution.

WAYNESBURG.

REPLIES BY J. M. BYE, M. D.

1. No.
3. Less.
4. None.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

STARK COUNTY—Continued.

6. None.
7. September; typho-malarial, ten cases.
9. Twenty-one.
10. Simple and inflammatory.
11. None.
12. Fair.
13. No.
14. Four cases.
15. Yes.
16. No.
17. Yes; one diphtheria.
19. None.

Last week a child, three years old, in Canton, twelve miles north of this place, died of diphtheria, and was taken to the church here for services before interment, the people here not knowing the nature of the disease at time of acquiescing to the request; but most of the children were kept away from the services fearing its contagiousness.

If any cases occur from this publicity of funeral services, I will report the same.

SUMMIT COUNTY.

CUYAHOGA FALLS.

REPLIES BY W. S. HOUGH, M. D.

1. No.
3. Less.
4. None.
6. Very few cases.
9. Not many and mild.
10. Mild.
13. Think not.
14. None.
15. As a rule, yes.
16. No.
19. None.

HUDSON.

REPLIES BY GEORGE L. STARR, M. D.

1. Yes.
2. Whooping-cough October, November, December, '86; measles April, June, '87; latter rather severe.
3. Greater.
4. Diseases of throat and lungs.
5. No; it is difficult to say.
6. Very little, if at all.
7. In July and August.
8. Don't know.
9. Three or four.
10. Mild.
11. Obscure.
12. Cellar drain obstructed in one case.
13. No; only one in a family had it.
14. Probably no cases within the past year.
15. I think not, as it was not regarded necessary.
16. No.
17. No.
18. Can not say.
19. Over a score of families.
20. Spring months—March to June.
21. Yes.

INLAND.

REPLIES BY G. A. STROUP, M. D.

1. No.
3. Less.
6. Had none.
9. Three.
10. Malignant.
12. Good.
13. Cases were two miles apart.
14. Had none.
15. Yes, in diphtheria.
16. No.
17. No.
18. Limited to one in each family.
19. None.

LOYAL OAK.

REPLIES BY A. T. WOODS, M. D.

1. No.
3. Less.
4. About same.
6. Five cases.
7. October.
8. Bad drainage.
9. Two cases.
10. Mild.
12. Poor.
13. None.
14. None.
15. No.
16. Yes.
17. In all but two.
18. No new cases afterward.
19. One case, had an epidemic of it three years ago.
20. Spring.
21. None.

This locality has generally been pretty healthy.

NIMISILA.

REPLIES BY A. SISLER, M. D.

The health of this village and vicinity for the year ending October 31st, 1887, has been good, with the exception of diphtheria. It has prevailed to a considerable extent the larger part of the year. The origin of this disease we attribute largely to the impure water flowing in the Tuscarawas River, which runs through this township from north to south. On this river is situated the Straw board factory at New Portage, which runs its refuse matter into the river and poisons the water to such a degree as to kill fish, frogs, snakes and turtles, and the stench from these dead and decaying bodies poisons the air all along this stream, as it flows through this township. While we believe this to be largely the origin of this disease, we know of other cases that spread by contagion. A family living close to the river had the disease and lost one of their children; a relation of theirs, three weeks after the death of the child, visited the family, and in about a week four of their children were attacked with diphtheria, and one of their number died. This family lived about two miles from the first family and no diphtheria prevailed in that neighborhood at that time. A large number of the cases assumed a croupy form, and died with what is called diphtheritic croup.

TRUMBULL COUNTY.

BURGH HILL.

REPLIES BY JOHN I. KING, M.D.

1. No.
3. Greater.
4. Simple and bilious remittent fevers.
9. None.
14. No cases.
19. A few cases; twenty-five.
20. March and April.
21. Isolation.

CHURCH HILL.

REPLIES BY HON. THOS. H. STEWART, M. D.

2. Measles and chicken-pox; no special features.
3. Less.
4. Pneumonia and measles.
5. No.
6. Three cases.
7. August.

TRUMBULL COUNTY—Continued.

9. None.
14. None.
19. About twenty cases.
20. July.

There was considerable pneumonia during the winter of 1886 and 1887.

The usual bowel complaints prevailed during the summer of 1887, among children, with a tendency during the fall to dysentery.

MECCA.

REPLIES BY JAS. S. BROWN, M.D.

1. No.
3. About the same.
4. Malarial.
6. One case.
7. September.
9. None.
14. None.
19. Fifteen or twenty cases.
20. February and March.
21. None.

NILES.

REPLIES BY A. J. LEITCH, M.D.

1. No.
3. About the same; but during the months of September and October we had quite a large number of cases of typho-malarial fever.
4. Above mentioned.
5. As most was in one part of the town, I believe it was the drinking water.
9. Two cases.
14. None.
19. None.

NORTH BLOOMFIELD.

REPLIES BY ALMER O. HUNTLEY, M.D.

1. No.
3. About the same.
4. Malarial fevers.
5. No.
7. August.
9. None.
14. None.
19. None.

ORANGEVILLE.

REPLIES BY G. W. HAMILTON, M.D.

1. There has been no epidemic the past year.
3. The amount of sickness was less.
6. We have a few cases of typho-malaria every year, but we had less than usual the past year.
7. In September, October and November.
8. Hot and wet weather.
9. Not any.
14. A few cases.
15. It was, as far as I know.
16. No.
17. In one case.
18. Scarlet fever did not prevail much, and there were no deaths.
19. There were a few mild cases.
20. May and June.
21. No.

WARREN.

REPLIES BY S. H. SMITH, M.D., H. O.

1. No.
3. Rather less.
4. Malarial fever.
5. No.
6. None.
9. Three.
10. One mild and two severe cases.
12. Fair.
13. No.
14. A few cases.
15. Not in scarlet fever.
16. No.
17. No deaths.
18. The diseases did not spread from the houses where they originated.
19. A few cases.
20. March.
21. No.

A case of diphtheria occurred in December, 1886, in a lady who had been to St. Louis, Mo., to visit a sister; while there, a boy, five years old, had died of diphtheria in the family she was in. I treated her case myself; isolated her; did not allow anyone under thirty years of age to go into her room, and no children to come near the house. There were no new cases. In September, 1887, a mild case occurred in a house almost across the road from the house where case No. 1 occurred. I isolated as well as I could but did not disinfect the house. In October, 1887, another case occurred in the same family, quite severe. I isolated this case, and after recovery disinfected the house, and had it thoroughly cleaned. There are six children in the family, and no other cases have occurred.

The other children were kept out of school three weeks, and the ones that were sick will not attend this term. All rags used around the sick were burned, and the dejections were disinfected.

There have been two deaths in the city during the year; one called tonsilitis, and the other croup, which I suspect were diphtheria. There were public funerals in both cases, and no new cases occurred.

TUSCARAWAS COUNTY.

BALTIC.

REPLIES BY A. S. METZLER, M. D.

1. No.
3. About the same as previous year.
4. None.
6. Limited.
7. August and September.
8. None apparent.
9. None.
14. None,
19. Limited.
20. April and May.
21. No.

NEW PHILADELPHIA.

REPLIES BY J. T. M'LEAN, M. D.

1. Yes; measles only.
2. Measles; about 200 to 250 cases; generally mild.
3. Greater on account of measles.
4. Malarial fever and measles.
5. Malaria, due to dry swamps.
6. Two or three cases.
7. September.
8. None.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

TUSCARAWAS COUNTY—Continued.

14. No cases.
19. Two hundred to two hundred and fifty cases.
20. September and October.
21. None.

RAGERSVILLE.

REPLIES BY H. J. PETER, M. D.

1. Measles and typhoid fever.
2. Measles extensive; typhoid limited.
3. Less.
4. Measles.
5. Do not.
6. Limited.
7. August.
8. Foginess.
9. None.
14. Not any.
19. Quite extensive.
20. April and May.
21. None by the laity.

The percentage of sickness was materially less.

SHANESVILLE.

REPLIES BY A. T. MILLER, M. D.

1. None, except measles.
2. About thirty cases of measles.
3. About the same, except in the month of August.
4. Diarrhœal diseases.
5. No; hot and dry weather.
6. Two cases.
7. Both in August.
8. No.
9. None.
14. Two cases simplex.
15. Scarlet fever; no precautions used.
16. No.
17. No deaths.
19. About thirty cases.
20. April and May.
21. No.

With the exception of the months of August and September, the health has been much better in this locality than for many years prior.

STRASBURGH.

REPLIES BY A. C. GOUDY, M. D.

1. No.
3. Less.
6. A few cases.
7. October and November.
9. Not any.
14. A few cases.
15. Yes.
16. No.
17. No deaths.
19. To a very small extent.
20. July and August.
21. No.

UNION COUNTY.

BROADWAY.

REPLIES BY J. B. TAYLOR, M. D.

1. Yes.
2. Measles; In the spring of 1887, an epidemic of measles occurred in this village and the surrounding community. It was characterized by its extreme severity; high temperature, (to 105.5° F.), and serious complications and sequelæ, viz: catarrhal pneumonia, acute purulent otitis, and continuance of fever into the typhoid condition after the natural course of the disease had passed. Epidemic of typhoid fever was closing as the year began.
3. About the same in regard to general diseases. In addition were the epidemics of measles and typhoid fever.
4. Measles and typhoid fever.
5. When the epidemic of measles made its appearance a protracted meeting was being held; persons having the prodromal symptoms attended the meeting, thus infecting those who had never had the disease. Frequently persons who had never had the disease visited those sick with it for the purpose of taking it.
6. Four cases in all; an epidemic had prevailed during August, September and October just preceding the beginning of the year spoken of.
7. In November.
8. Overcrowding and impure water supply.
9. There has been no diphtheria for the past seven years, up to the close of the year spoken of.
14. Three cases. One in my own practice and two reported by another physician.
15. Yes.
16. No.
17. No.
18. So far as it is possible to estimate, the spread of the diseases in question was very much limited by the precautionary measures.
19. Throughout the entire surrounding country.
20. March, April and May.
21. Very little.

Remarks.—Malarial fevers are apparently decreasing, probably on account of more thorough drainage and cultivation of the soil. There is now but one known case of phthisis pulmonalis in this entire section.

We have a great scarcity of water every summer; many wells go dry early in the season. Diarrhœa and dysentery usually prevail during the drouth, but this year, although the drouth was more severe, yet the bowel troubles were not so frequent as in former years. There was also, during the summer, greater immunity from other diseases.

I have noticed that the safety of many cases of measles was hazarded by the early treatment they received at the hands of friends before calling the physician. They were kept in over-heated rooms; they were too closely covered; they were denied water and given hot teas to "bring out the eruption" prematurely. By these measures many cases were rendered unnecessarily severe, and some terminated fatally. I would respectfully suggest that the board pursue some line of investigation on this subject.

MARYSVILLE.

REPLIES BY D. W. HENDERSON, M.D.

1. Yes.
2. Measles and scarlatina. The measles were quite general in our county, more especially in the eastern part, of a rather severe form, complicated in many cases with bronchitis, capillary bronchitis and pneumonia. The scarlet fever generally was of a mild form.
3. There was more sickness in the last year than in the two or three years previous.
4. We had more cases of consumption, pneumonia, measles, scarlatina, and diseases of the stomach, bowels and liver.
5. Pneumonia and consumption were attributed to the cold, and very changeable weather of last winter and spring; diseases of the liver to the torrid and long continued heat of last summer and fall. The diseases of

UNION COUNTY—Continued.

the stomach and bowels were attributed to over-eating, and the excessive use of water during the warm dry weather.

6. Not more than generally in dry seasons; none, that I know of in our place.

7. August, September, October and November.

8. The only condition that I could perceive was a scarcity of water. The wells were all very low; many of them dry. I have noticed this fact in connection with typhoid fever for the last thirty-five years. I attributed the exemption of Marysville from typhoid fever to the very general use of the water from the magnetic spring, both for culinary and drinking purposes. In a town of our size (3,500) the wells cannot help but be impregnated more or less from the privies, pig-pens, stables, etc. Typhoid fever generally makes its appearance in seasons when the water becomes low in the wells, and scarce in the pastures and fields.

9. Quite a number.

10. Generally mild.

11. The only facts observed by me were that more cases occurred during the prevalence of scarlatina than at other times. Frequently, two in a family of several children would be sick; one with well marked scarlet fever, the other equally as well marked with diphtheria; yet, I never knew the scarlet fever to repeat itself in the same person while diphtheria usually does.

12. Poor, indeed; the best houses even are badly ventilated.

13. No.

14. It extended over considerable territory.

15. They were in scarlet fever, and in bad cases of diphtheria.

16. No; even the teachers were not permitted to board in families having it.

17. Funerals were generally held at the houses of the deceased, and parents generally prevented their children from attending.

18. They were almost completely successful in arresting the spread of scarlet fever, but I do not think the practice was carried out in diphtheria.

19. Measles extended pretty generally over the county, more especially in the eastern part, where it was moderately bad, several cases dying.

20. In the winter and spring months.

21. Not that I know of, except what boards of education and parents did.

In speaking of our town being exempt from typhoid fever during the last year owing, I think, to the use of our spring water; yet, where a patient had typhoid fever, and used the spring water, he almost invariably got worse. Scarlet fever has again broken out in a family of four children in our town, and it remains to be seen whether it is as mild this year as last.

NEW CALIFORNIA.

REPLIES BY W. C. VIGOR, M. D.

1. None since June 21, 1887, at which time I located here.
3. Less, as I understand.
4. Malarial fever.
6. None.
14. None.
19. None.

I am informed that there has been no epidemic here within the year; it is reported to have been one of the healthiest years that they have had for a great period of time.

UNIONVILLE CENTRE.

REPLIES BY CHAS. M'CUNE, M. D.

1. Diphtheria and typhoid fever.
2. Was brought to the school from a distance by a child that attended the school.
3. The general health has been better.
4. Malaria.
5. The cause of the typhoid was due to the poor water supply from the long drouth.
6. Five cases.
7. All in September.
9. Twenty-three or four.
10. Rather malignant but no deaths.
11. Imported.
12. Good.
13. The first case appeared in the school, and all the rest were confined to pupils of that particular room.
14. None.
15. As far as possible.
16. They were not.
17. None.
18. There were no cases other than in the families that sent scholars to that particular room.
19. None.

VAN WERT COUNTY.

CONVOY.

REPLIES BY ROBERT L. CROOKS, M. D.

1. No.
3. Not any worse.
4. Malaria.
6. Not to exceed ten cases.
7. August and September.
8. Low wells.
9. Six.
10. Not malignant.
12. Good.
14. But a few cases.
15. Yes; rigidly.
16. No.
17. No.
18. Were successful in controlling and preventing its spread.
19. None.

Three cases of diphtheria in my private practice this month, but not of a malignant character.

VAN WERT.

REPLIES BY W. C. HASTINGS, M. D.

1. No.
3. Greater.
4. Typhoid fever.
5. Scarcity of good water.
6. Greater than for previous years.
7. August, September, and October.
8. Want of good water.
9. About twelve.
10. Mild.
12. Poor.
13. No.
14. Little, if any.
15. Yes; as far as I know.
16. No.
17. No.
18. They did not spread.
19. Numerous cases.
20. March, April, and May.
21. No particular precautions.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

VAN WERT COUNTY—Continued.

WETSEL.

REPLIES BY J. J. WORLEY, M. D.

3. The amount of sickness has been less.
6. Typhoid fever prevailed to a considerable extent.
7. August and September.
8. The decomposition of vegetation throwing off the miasma.
14. Not any.
19. Not to any great extent.
20. March, April and May.
21. Not any.

WILLSHIRE.

REPLIES BY J. F. SHAFFNER, M. D.

1. Yes.
6. Epidemically.
7. July and August.
8. Bad sanitary condition.
9. I treated over one hundred cases.
10. Nothing unusual from its general character.
12. Mostly bad.
13. No.
14. None.
19. Not any.

VINTON COUNTY.

ALLENSVILLE.

REPLIES BY R. RUTLEDGE, M. D.

The amount of sickness in this locality was about the same as for previous years.

There were a few isolated cases of typhoid fever occurring during the months of March, April and September.

The patients were occupants of farmhouses, and the conditions that seemed to favor its development were stagnant water and gardens covered with refuse matter.

We have had no diphtheria nor scarlet fever.

Measles prevailed as an epidemic during the winter months. The disease was not violent. The afflicted were treated for the most part by so-called home remedies, hence no precautions were taken to prevent its spread.

ZALESKI.

REPLIES BY A. W. JAMES, M. D.

1. No.
3. The same as previous years.
4. None.
6. No cases.
9. Ten or fifteen.
10. It was of a very mild type.
13. No.
14. Had none.
16. Yes.
17. No deaths.
19. Very limited.

WARREN COUNTY.

LEBANON.

REPLIES BY S. S. SCOVILLE, M. D.

1. No.
3. Much less.
4. Cannot say.
6. To a very limited extent.
8. Bad water.
9. Perhaps fifty.
10. Mild.
13. Some cases.
14. Very few cases—six or eight.
15. So far as possible.
16. Were not.
17. Generally.
18. Cannot say.
19. We had a mild epidemic last winter and spring.
20. Cannot say.
21. Yes.

Remarks.—We have most every year an occasional case of typhoid fever, generally occurring in the fall. Several years during the last twelve years we have had cases in July and August. They have been attended with by far the greatest mortality, owing, I think, to the hot weather, as the temperature of patients, generally, was higher than with the cases occurring in the fall. The few cases this and last year have occurred late in the fall. Just now we have two or three cases in town, and two or three in the country. Bad water, I think, is the cause.

Diphtheria has occurred more frequently with me in houses having foul cellars. Cellars are nearly always foul. Decaying vegetables seem to afford a nucleus for breeding diphtheria germs. We had as near neighbors a family (two aged persons) living in a brick house with a large cellar, which was never free from vegetables of some kind, and not always in sound condition, if ever. The house was kept tightly shut up most of the time. A grandson, a boy aged about six years, came from a distance on a visit and was attacked with diphtheria the fourth day after his arrival. On two occasions, subsequently, by visiting his grandparents, he contracted the disease, and on the fourth day. Some time after, a year or more, this boy and a brother came with their parents to attend the funeral of the grandmother; and the fourth day after coming the two boys and the father were attacked with diphtheria. The cellar I regarded as the breeding place of the germ, as the door opened into the dining-room where, of course, the family were assembled at least three times each day.

Diphtheria is infectious, I am confident. But not in the degree claimed by many authors. Underground cellars, in my humble judgment, ought never to be constructed under any dwellings, for proper light and ventilation can never be had.

SPRINGBORO.

REPLIES BY RALPH S. MICHEL, M. D.

1. No.
3. Rather less.
4. Malaria.
5. No obvious reason.
6. No cases.
9. But few.
10. Mild.
14. No cases within the year.
19. Good many cases.
20. March and April.

Remarks.—I do not grasp your question, 21. If you mean by the good advice of physicians, I would say yes; but if you mean by our local health officer, I would say no.

The worst cases of diphtheria here were in

WARREN COUNTY—Continued.

the family of a butcher, one room of whose dwelling was used for meat and contained refrigerator (ice chest).

The principal of schools here is ordered to send any pupil home upon any evidence of sore throat; and the pupil so dismissed is not allowed to attend school again until a medical examination and time show that there is no contagious disease present.

We can say who shall and who shall not attend school; but with the churches it is different. We are blessed with seven. During the winter they go largely into that form of worship called "revivals;" and it is from this cause more than any other that diseases contagious in character are spread.

WASHINGTON COUNTY.

ARCHER'S FORK.

REPLIES BY J. R. TAYLOR, M. D.

1. No.
3. Less.
6. Very little.
7. October.
8. Bad water.
9. Six.
10. Mild.
13. No.
14. None.
19. None.

LAWRENCE.

REPLIES BY ELLIS FLEMING, M.D.

1. No.
3. Greater.
4. Diarrhœa.
5. Continued dry weather and bad water.
6. A few cases.
7. August and September.
8. Dry, hot weather, cool nights and decaying vegetable matter.
9. Have not kept a record.
10. Mild.
12. Not good.
15. Yes; to some extent.
16. No.
19. None.

LOWER SALEM.

REPLIES BY M. V. HARDY, M.D.

1. Yes.
2. Continued fever, simulating typhoid.
3. About the same.
4. Measles, scarlet fever, diphtheria and continued fever.
5. No.
6. Very little of it.
7. Fall months.
8. Drouth.
9. Fifty.
10. Malignant.
12. Fair.
13. Usually went through the family.
14. About same as diphtheria.
15. No means of doing so; disinfectants used.
16. No.
17. Yes.
18. Were not practiced.
19. Very few families escaped.
20. Spring, mostly.
21. None.

Last spring we had a visitation of measles, which was no respecter of persons, calling on all who had not before become acquainted with them. The disease was of a mild form, with no deaths resulting from it.

Scarlet fever followed—of rather a mild type—calling on most of the children in the vicinity, and like the measles, made plenty of business for the doctors, but little for the undertaker. Even now, we have an occasional case of it.

Diphtheria of a malignant character has been prevalent all the season, with probably more cases in the spring and fall than at any other season of the year.

We think it contagious when it is confined or where proper sanitary measures are not enforced; hence, we isolate the cases so far as is possible, and observe sanitation so far as is practicable. I use carbolic acid freely about the house, and admit as purely oxygenated air as we can be favored with, and in unlimited amount. No deaths to report from the disease this year. It usually attacks all children in the house when once introduced. Sporadic cases now.

We have had but few cases of typhoid fever this year. No deaths from it.

A form of continued fever, in some respects simulating typhoid, has been quite prevalent in this locality for the past two years. The prodromic stage answers to typhoid. There is the same general malaise, anorexia, cephalalgia, delirium and continued fever, common to typhoid; but there are no rigors, no epistaxis, no iliac tenderness, no diarrhœa, no tympanites, and no rose-colored spots over abdomen or breast, such as are usually found in cases of typhoid fever. I have seen no case where Peyers' patches seemed in the least involved or where there has been any ulcerated condition of any portion of the alimentary canal. Constipation seems rather the rule, and the patient seems even furious instead of suffering from that low, muttering form of delirium. The disease runs about the same course, as regards time, as typhoid, but when convalescence obtains the patient makes a rapid recovery. Most cases are found in the immediate vicinity of oil wells. No deaths from it in my cases, but I know of several cases which proved fatal.

A mortuary report from this field would be mostly made up from old chronic lung diseases, and from senility.

NEW MATAMORAS.

REPLIES BY JOHN BROOKS, M.D.

1. No.
3. Same.
6. None.
14. None.
19. None.

Health good for the past year.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

WAYNE COUNTY.

APPLE CREEK.

REPLIES BY J. K. KING, M.D.

1. None.
3. The amount of sickness was greater this year than has been for several years past.
4. Malarial fever.
5. I attribute it to the stream becoming so low on account of dry weather and the water standing in pools and stagnating, and vegetable matter decaying, and no heavy freshets to carry off this filth.
6. None—perhaps one case or so.
9. No diphtheria.
14. None.
19. None.

FREDERICKSBURGH.

REPLIES BY —— ——, M. D.

1. Yes—catharral fever, pneumonia and diphtheria.
2. The catarrhal fever was very extensive; scarcely any adult was exempt. I would be safe in saying that in this village and locality, during November and December, 1886, there were 1,000 cases, the onset of which simulated that of typhoid for the first week—tympanites, dry tongue, rapid pulse, temperatue 104° to to 105½°, suppression of urine, etc.
3. Greater.
4. Pneumonia, catarrhal fever, measles, mumps and whooping-cough.
5. I do not consider them due to any special causes, with the exception of pneumonia, which is largely due to exposure and weather influences, which are not removable.
6. We had of typhoid four cases during the year.
7. In August.
8. The hot and dry weather, low water supply and improper sanitary measures.
9. About thirty-five.
10. Of rather a mild form.
11. The origin was rather difficult to determine, the epidemic occurring in a country school district, although it originated in the school and was largely communicated through that source before the nature of the disease was discovered.
12. The houses, most of them, are in good sanitary condition, although they were so arranged after treatment had begun. The sanitation was bad in nine-tenths of the families in which it occurred.
13. They did. In one family a child was taken sick with diphtheria, aged nine years. In six days after two other children of the same family were taken, and in three weeks after the first child had taken sick a neighbor woman visited the family, taking with her a five-year-old daughter, and in nine days after the child was taken sick with diphtheria and died with membranous diphtheria; and a more conclusive evidence is, when the disease begun in the school every family that were sending their children to school seemed to take it from the same source.
14. But three cases, confined to one family only.
15. Yes.
16. No, not after disease was discovered.
17. No.
18. It is difficult to state.
19. Measles occurred very extensively during the months of March and April; the whole community was invaded, probably 300 cases.
21. No.

NEW PITTSBURGH.

REPLIES BY F. H. WILSON, M. D.

1. No.
3. About the same.
6. None.
9. None.
13. No.
14. None.
19. None.

Remarks.—I have had considerable malarial trouble in the last year, and in fact for several years. I can not account for it, for we are very high here and no stream close. Last winter we had a great deal of sore throat, but no diphtheria—a sort of influenza. Some of the neighboring physicians pronounced it diphtheria, but there were no deaths from it in my cases, no membrane in throat, and all were very amenable to treatment.

ORRVILLE.

REPLIES DY S. P. GRILL, M. D.

1. Dysentery.
2. We had about fifty cases.
3. Less.
4. Dysentery and diphtheria.
5. Dry weather.
6. Only a few cases.
9. About ten.
10. Mild.
12. Fair.
13. No.
14. None.
15. Not all.
16. No.
17. No.
19. None.

We have had no epidemic of any kind during the year, except during August and September; dysentery and diarrhœa last two months. Very healthy.

SHREVE.

REPLIES BY W. S. BATTLES, M. D.

9. Six to ten cases.
10. Mild.
11. It was entirely sporadic.
12. Good.
13. Could trace no contagion.
14. A few sporadic cases.
15. But little attention was paid to it.
16. No.
17. No deaths.
19. South of our town it prevailed.
20. April, May and June.
21. None; in one school one patient spread the disease into sixteen families.

Remarks—In reference to the fever that has prevailed in this locality during the past summer there is a doubt in my mind as to the real character and causation of the disease. I have said in my report that some cases had well developed symptoms of typhoid fever, i. e.: they had high temperature, frequent respiration and pulse rate. But little tympanites, slight tenderness, but at no time manifesting any serious lesion of the intestines, and terminating as by crisis in copious sweating. In referring to my weekly reports, you will remember I reported many cases of remittent fever. From the time of the first severe frost the disease began to decline, and since severe freezing set in have had no case in which typhoid symptoms have been at all prominent.

I have had no deaths among my patients

WAYNE COUNTY—Continued.

though mine numbered as many as any other physician in the town. I made my debut in the practice of medicine in 1851, in the midst of the most fearful epidemic of typhoid fever that ever scourged Northern Ohio, and from that time to 1874 there were no years but afforded more or less of well defined cases of that meanest of all fevers. It prevailed at all seasons of these years, unmitigated by temperature, the worst that I ever saw occurring in mid-winter in steady freezing weather; and along this time of year, during almost all of them, deaths gave me an opportunity to verify diagnosis by autopsy. It may be that since 1874 the disease has undergone some marked modification. I am very sure I have not seen a typical case since that date.

SMITHVILLE.

REPLIES BY P. S. GREENAMYER, M. D.

We have had two epidemics in this locality during the year ending October 31, 1887; one of bilious remittent fever, and the other bronchial catarrh. The bilious remittent fever prevailed mostly during the months of July, August, September and October. The average duration of fever was about three weeks. If it had not been for the absence of rose colored spots, and tenderness with gurgling in the right iliac region, and a daily falling temperature during the first week instead of the reverse, it might have been mistaken for typhoid fever. Catarrh and bilious diarrhœa were present and persistent in nearly all of the cases.

The epidemic of catarrh of the air passages prevailed from the latter part of winter until about harvest. The amount of sickness outside of the above epidemics was about the same as for previous years. I can not attribute special cause for the prevalence of these epidemics. We had but one case of typhoid fever in this immediate locality, and that was not sporadic, as it was not contracted at home. It occurred during the month of July.

We had a few cases of diphtheria and scarlet fever, but all of a mild character. Neither of the diseases were carried into the schools, isolation being practiced so far as known.

We had no funerals of these to make public.

A few cases of measles occurred during March and April. These were ordinarily mild. Isolation was the only precaution taken to limit its spread.

STERLING.

REPLIES BY N. B. DAWSON, M. D.

1. No.
3. Rather greater.
4. Those of malarial origin.
5. To the water in ponds and extreme dry weather; proper drainage will remove the cause.
6. Had seventeen cases.
7. September and October.
9. None.
14. None.
19. None.

Remarks.—In country practice typhoid fever usually occurs in old houses that have either no cellars, or else bad ones. Low wells seem to have some connection with it. I am just recovering from a ten weeks' siege, which I certainly contracted among my patients, hence I cannot write.

WEST SALEM.

REPLIES BY C. L. KINNAMAN, M. D.

1. Yes.
2. Measles; the whole community.
3. Less.
6. No typhoid fever this year.
9. Twenty-four cases; sporadic.
10. Mild type.
11. Unknown.
12. Ordinarily good.
13. No.
14. No scarlet fever.
15. Yes.
16. No.
17. No deaths.
18. Not any spreading of the disease from affected persons.
19. General among children not previously affected.
20. Fall months.
21. No.

WILLIAMS COUNTY.

AINGER.

REPLIES BY R. R. ALWOOD, M. D.

We have had but one epidemic during the year indicated, viz.: Dysentery, which began the fore part of August and continued till the middle of September. There was nothing peculiar about the cases, except that they were nearly all *typical*, a few exhibiting a malarial element.

One of the causes of this epidemic I attribute to the consumption of immature or imperfect fruit or vegetables, caused by drouth.

There has not been so much sickness in this vicinity during the year as usual. Malarial diseases have largely predominated. The causes of malaria are being rapidly removed by extensive underdraining.

The few cases of typhoid fever, which occurred miscellaneously through the year, exhibited nothing peculiar. Bad hygienic surroundings associated with each case.

But three cases of diphtheria occurred during March and April, though there was at that time a wave of sore throat. They occurred in good families. My experience with diphtheria leads me to believe that it is not contagious; but so long as this theory is not conclusively proven, I think we should deal with it as though the opposite were true.

Measles prevailed to some extent, during February, not amounting to an epidemic. Isolation was the only measure adopted to prevent its spread.

But one case of scarlet fever has occurred during the last four years.

One point more I wish to refer to is, the bad condition of many of our wells. The well is from fifteen to twenty feet deep, and walled with stone, leaving a lumen of about twenty to twenty-four inches. The platform over the well consists of one layer of boards of variable thickness, from one to two inches. Through the center extends the pump. The ground surrounding the well is either level or sloping toward the well. No waste-trough is found beneath the pump-spout; but the water is splashed about on the platform to wash through the cracks the fecal contributions of omnipresent chickens. The country practi-

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NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 34 and 35 of this Report.

WILLIAMS COUNTY—Continued.

tioner finds the above well, with various modifications, in the yards of numerous farmers; many of them well-to-do people. The wells should be deeper, the platform should be double, and slightly inclined to carry off the rain. There should be a waste-trough made of a single two-inch plank, with cleats nailed on the side, and enough paint used to make it water-tight. This should carry the waste water to a drain. The platform, which should be eighteen inches to two feet higher than the surrounding level, should be surrounded with a gently sloping bank of clay, covered with a layer of gravel an inch or two deep.

BLAKESLEE.

REPLIES BY G. E. STARNER, M. D.

A peculiar form of laryngitis prevailed during December, 1886, and January, 1887, which we termed *epizootic*. It attacked children mostly, and was attended with a tickling sensation in the throat, followed by an aggravated cough, sharp and hacking. In some cases there was extreme prostration, and without any lesion of the lungs. Later on we had an epidemic of measles, some cases being exceedingly severe, being difficult to bring it to the surface. It prevailed during February and March.

There were only three or four cases of typhoid fever during August and September. Shallow wells, supplied with impure water, seemed to be the favoring element of development.

Had one case of scarlet fever, which was isolated and recovered in three days.

No epidemics except measles, and they were of a mild form.

During December and January last a severe form of irritable bronchitis prevailed as an epidemic. The leading features were a dry, explosive cough, and generally great prostration, although no fatalities occurred in my practice among about fifty cases of the disease. It seemed to flourish with the extremely cold and dry condition of the atmosphere, and to disappear as an epidemic as the weather moderated.

The amount of sickness was about the same as in the previous years.

Typhoid and typho-malarial fevers prevailed to an unusual extent during the months of August, September, and October.

EDGERTON.

REPLIES BY J. C. MORTLAND, M. D.

1. No.
3. About the same.
4. Cerebral hemorrhage.
5. It may be the unusual hot weather.
6. A few cases.
7. September.
8. Impure water.
9. None.
14. None.
19. Extensively.
20. March and April.
21. None.

MONTPELIER.

REPLIES BY BLAIR HAGERTY, M. D.

1. No.
3. It has been less.
4. None.
6. A few isolated cases.
7. October.
8. Drouth.
9. None.
14. None.
19. Very generally.
20. March and April.
21. Yes.

Our village, like many others of its size in the State of Ohio, has no Board of Health; consequently, but little or no attention is paid to sanitary measures except by the physicians, and that is very limited.

In my opinion, every incorporated town should have a Board of Health, and it should be composed of medical men. The subordinate boards could act under instructions from the State Board, and report the condition of their respective localities correctly.

Of all the various preventable or removable causes of diseases to which the physician's attention is called in the small towns and rural districts, it will usually be found that the water supply is the most important, because it is in these localities that it is most liable to become contaminated in such a way as to produce certain specific fevers, diarrhœal diseases, etc.

WOOD COUNTY.

BOWLING GREEN.

REPLIES BY G. HIGGINS, M.D.

1. No epidemic of disease has prevailed in this locality.
3. Sickness was greater in July, August, September and October than the corresponding months of the previous three years.
4. Malarial fever prevailed.
5. I attribute it to the intense heat and low stage of water.
6. Typhoid fever to a limited extent.
7. In the month of September, really typho-malarial.
8. The low stage of water supply.
9. I have known no cases of diphtheria.
14. No cases of scarlet fever have come to the knowledge of our physicians prior to October 1st.
19. No epidemic of measles has occurred.

April, May and June were months in which our citizens enjoyed unusually good health.

Scarlet fever reported last week was a sporadic case, very mild, but entire isolation prevented contagion. No cases occurred since.

HASKINS.

REPLIES BY E. J. GREENFIELD, M.D.

1. No.
3. About the same.
6. About the same as previous year.
7. September and October.
8. Bad water.
9. None.
14. Very few cases.
15. Nearly all.
16. No.
17. No deaths.
19. Good many cases.
20. April.
21. Yes.

MILLBURY.

REPLIES BY L. C. LAW, M.D.

We have escaped any epidemics. The amount of sickness was about as usual; remittent and intermittent fevers were more prevalent in August and September. I attribute this to the poor quality of drinking water.

WOOD COUNTY—Continued.

The wells usually are shallow (eight to twelve feet deep), in a peculiar clay soil that receives the surface water only, and holds it as in a cup.

The dry weather evaporated much of the water; many wells were dry, and what little water there was was full of concentrated impurities. I advised the boiling of all the water used, and in wells that contained sufficient water to make it practicable to drop a piece of nitrate of potassa into the well.

We had no well-defined cases of typhoid fever, but some bilious cases in September and October with typhoid tendencies, caused by poor water and poor sanitary conditions, especially damp, dirty cellars under the living-rooms with little or no attention paid to drainage or ventilation.

There were only a few cases of diphtheria, and those of the sthenic grade. These cases occurred in winter. I met but one or two cases during the summer.

We have had no scarlet fever here for several years. There were a few cases of measles in July.

Quite a number of young girls in this locality are troubled with bronchocele. I am aware of four cases under twelve years of of age, and hear of others; have not met with any cases in older people.

There is some limestone in this locality, and sanitary conditions were poor in some cases, and not good in any of them.

PERRYSBURGH.

REPLIES BY J. H. RHEINFRANK AND I. S. BOWERS, M. D.'S.

1. Typhoid, diphtheria and whooping-cough.
2. Percentage of laryngel diphtheria above the average.
3. About the same.
4. Typhoid fever.
5. Scarcity of water.
7. September and October.
9. Fifty.
10. Seven.
12. Bad.
13. Yes.
14. None.
15. No.
16. No.
17. Yes.
19. A few cases.
20. June.
21. Yes.

PORTAGE.

REPLIES BY W. E. HUGHES, M. D.

1. No.
3. Less.
6. None.
9. None.
14. None.
19. None.

RISING SUN.

REPLIES BY H. L. BYINGTON, M. D.

There has been more than the usual amount of sickness, although no epidemic has prevailed.

In this usually healthy locality, with its exceptionally good water, true cases of diphtheria and typhoid fever are comparatively rare, but this season they, together with cholera infantum, have been more than usually prevalent.

The number of cases of true diphtheria probably did not exceed eight, or possibly ten, which generally assumed the ulcerative type, though none proved fatal.

In one isolated family, a poor man living in a rented house, with poor sanitary surroundings, I found a daughter about ten or twelve years of age suffering with diphtheria and two other small children with swollen, inflamed, sore throats, and other common symptoms. In a few days the mother presented the same premonitory symptoms, and one after another took the bed with diphtheria of the ulcerative type. This comprised the entire family, with the exception of the father, who worked and took his meals away from home. Fears of the disease prevented the neighbors from coming in and it did not spread beyond the limits of the family. The yard about the house was not in the best condition, and a large hog wallow was noticed within about four feet of the well and ten feet of the house. I urged the importance of better sanitary conditions, but this was not observed.

There have been about twenty cases of typhoid fever, the greater number occurring in the months of August and September. I attribute the presence of this disease to dry weather, and consequent low water, shallow wells, shale rock, and slops being thrown from the house too near the well.

Cases of cholera infantum have been quite frequent and severe, many cases proving fatal.

Bilious sick stomach (milk sickness) occurred in four cases—one of these in the month of March, a time heretofore unknown, so far as I am aware. Their cows had been allowed to run in the woods a short time, no fear being entertained at that season of the year. One case proved fatal.

There were no cases of scarlet fever; and measles occurred only in a very limited number of cases.

WESTON.

REPLIES BY GEO. B. SPENCER, M.D.

1. Yes.
2. Typhoid; slight; twelve cases.
3. About the same.
4. Scarlet fever.
5. Dry weather; bad water in wells.
7. September and October.
8. Concentration of water in wells by dry weather.
9. About twelve cases.
10. Mild; no deaths.
12. Bad as to drainage.
13. No.
14. Ten cases.
15. Yes.
16. No.
17. No deaths.
18. Not all children in any family had the disease.
19. None.

Healthiest country in the world.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 34 and 35 of this Report.

WYANDOT COUNTY.

UPPER SANDUSKY.

REPLIES BY I. N. BOWMAN, M.D.

1. No.
3. Less.
4. Diphtheria and typhoid fever.
6. More than previous years.
7. September and October.
8. Drouth.
9. Fifty probably.
10. Mild.
12. Fair.
13. Yes.
14. A few sporadic cases.
15. Yes.
16. No.
17. No.
18. About ninety-five per cent.
19. A few sporadic cases.
20. April and September.
21. Yes.

Upper Sandusky is a village of four thousand inhabitants, situated on the left bank of the Sandusky river, and is notably free from disease in epidemic form.

When diseases contagious in nature occur here their communicability seems confined to those who are brought in immediate contact with the sick, as members of the same family when isolation is not practiced.

Nature has contributed largely to make Upper Sandusky and vicinity very healthy. Situated near the river, facilities for drainage are excellent, and the contributions of art have made it almost perfect.

WHARTON.

REPLIES BY J. ODENBAUGH, M.D.

2. Typhoid fever.
3. About same except typhoid.
4. Typhoid fever.
5. Imperfect sewerage, low water, etc.
6. Twenty-five cases.
7. September and October.
8. See above.
9. None.
14. None.
15. I always do in these cases.
19. None.

Our neighborhood is generally healthy.

ADDENDA.

[The following towns were inadvertently omitted in their regular order.]

FAYETTE COUNTY.

PLEASANT VIEW.

REPLIES BY J. LAWS LINES, M. D.

1. No.
3. Slightly more.
6. But little in excess of previous years.
7. September and October.
9. Five.
10. Mild.
12. Good.
13. There were none that did except case mentioned on opposite page.
14. No scarlet fever.
16. No.
17. Yes.
19. No measles.

Remarks.—We have had no epidemic of any form of disease. We had somewhat more sickness during the year past than usual. The increase being of the form of typhoid. It was worse during September and October. We have had an unusually dry season, with a terrible amount of dust. The wells nearly all failed, stock in some cases drinking very foul, stagnant water. This may have originated disease in the milk. Then, again, we have had more hog disease than usual; and I can't help but think that there is some connection (in some cases, at least) between what is called hog cholera and typhoid fever.

I have noticed frequently that in a neighborhood where hog cholera is prevalent, there also is the typhoid fever, if not at the same time, the swine disease rages, then sure the following fall or winter. There has been but five cases of diphtheria, and these very mild. I had one case. I believe the child was only about two years of age; caught it from a pet kitten.

HOLMES COUNTY.

HOLMESVILLE.

REPLIES BY EDGAR COLE, M.D.

1. No.
3. Less.
9. Twelve to fifteen cases.
10. Mild and severe.
12. Not good.
14. Four or five cases.
15. Isolation was practiced.
16. No.
17. No deaths.
19. Four or five cases.
20. July and August.
21. Yes.

I was called to treat a family of four children in July, the oldest one taken with diphtheria,—a medium case. In a day or two the other three came down with diphtheria, scarlet fever and measles; the temperature was as high as 107°. The first and second children had been attending school, and there was measles in the neighborhood of the school. The oldest one had no symptoms of scarlet fever or measles.

Three or four weeks later, in August, I was called to see another family, one quarter of a mile from first one spoken of. In this family I found the youngest, about two years old, with the above three diseases; three other children with mild cases of diphtheria, and the mother with a bad case of tonsillitis. The sanitary condition of these houses was not very good.

HOLMES COUNTY—Continued.

WINESBURGH.

REPLIES BY A. C. CRANZ, M. D.

1. No.
2. None.
3. About the usual amount.
4. Pneumonia.
5. Cause unknown to me.
6. There have been six cases of typhoid here since September 1st. There have been cases of typhoid fever in this locality for several years past, and these have almost all occurred in the last four months of the year. I believe it is due to the contamination of the drinking water with organic matter, thus affording a pabulum for the "specific poison." The drinking water in this community is obtained from springs and wells roughly walled up with stones without mortar or cement. Privies, with a very few exceptions, without vaults. In many cases, too, the natural drainage of the land is from the privies and manure heaps towards the spring or well from which the drinking water is obtained. My observation is that the first cases of typhoid in each year have occurred a short time after the first rain following the dry months of the summer.

In an epidemic of diphtheria several years ago isolation of the sick was all that I was able to accomplish. In the seven years that I have been in practice here there has been no scarlet fever present.

9. No diphtheria for several years.
14. No scarlet fever.
16. Yes.
17. Yes.
18. None practiced.
19. None.
21. No.

SUMMARY OF REPORTS OF HEALTH OF TOWNS.

The entire number of reports received was 430, representing 87 counties of the state, Scioto being the only county from which reports were not received.

EPIDEMICS.

In answer to question No. 1, 178 towns reported epidemics during the year, while 232 reported "no epidemic" present.

Measles was reported epidemic in 86 places, and 42 counties; scarlet fever in 19 places and 15 counties; typhoid fever in 21 places and 18 counties; diphtheria in 31 places and 22 counties, and whooping cough in 9 places and 8 counties.

Mumps was reported as epidemic in 4 places, dysentery 6 places, typho-malarial fever 6 places, influenza 2 places, rœtheln, 2 places, malarial fever 2 places, catarrhal fever, 2 places, cerebro-spinal meningitis, one place, and chicken-pox in one place.

AMOUNT OF SICKNESS.

The amount of sickness, as compared with the previous year, was reported as "greater" in seventy places, "less" in 170, and "about the same" in 150 places.

DIPHTHERIA.

Diphtheria was reported present in 250 towns, and in all counties excepting Defiance, Ottawa. Sandusky and Tuscarawas.

TYPHOID FEVER.

Typhoid fever was reported present in 316 towns, and in all counties except Defiance and Lucas. As these counties furnished but one report each, the disease may have been present at other places.

As to the time of year typhoid fever prevailed; 166 report September; 130, October; 81, August; 20, November; 15, July; 13, December; 8, February; 7, January; 6, April; 5, March; 5, June and 2, May.

SCARLET FEVER.

Scarlet fever occurred in 164 of the towns reporting, and in all counties except Allen, Coshocton, Delaware, Erie, Holmes, Meigs, Mercer, Noble, Ross, Summit, Vinton and Greene.

ISOLATION AND DISINFECTION IN SCARLET FEVER AND DIPHTHERIA.

Of those reporting the presence of scarlet fever and diphtheria, 156 state that isolation and disinfection were practiced to limit their spread; while 75 reported that such precautions were not taken.

PUBLIC FUNERALS IN DEATHS FROM SCARLET FEVER AND DIPHTHERIA.

In 86 places where deaths occurred from these diseases, public funerals were held, 69 reporting that funerals, in such cases, were private.

MEASLES.

Measles was reported present in 266 of the places heard from, and in all counties except Erie, Fayette, Harrison, Henry, Noble and Pike.

PRECAUTIONS TO LIMIT ITS SPREAD.

In 125 of the places reporting the disease, no precautions were taken to limit its spread, while but 81 report that such precautions were taken.

The answers received in regard to the causes of typhoid fever, (question 8) the contagiousness of diphtheria, (question 13) and the efficacy of disinfection and isolation, in limiting scarlet fever and diphtheria, (question 18) afford information of the greatest value, which could not well be summarized.

In many of the replies an indirect or no answer at all was given. For this reason the negative side of the question often could not be ascertained. It is presumable, however, that where no answer has been given to questions relating to the presence of typhoid fever, diphtheria, etc., these diseases have not been present.

While the reports indicate that preventable diseases prevailed to a considerable extent, the amount of sickness, on the whole, has been decidedly less than during the year previous.

From the great interest manifested by physicians and others throughout the State, in the prevention of disease, we may reasonably expect a decided decrease, in future years, of sickness from preventable diseases.

REPORT ON THE WATER SUPPLY AND DISPOSAL OF SEWAGE OF THE TOWNS OF OHIO.

At the November meeting of the State Board of Health the subject of "water supply" came up for discussion.

Dr. H. J. Sharp, Chairman of the Committee on Water Sources, Sewerage, Drainage and Disposal of Substances, Injurious to Health, proposed that information in regard to the water supply and its relation to the public health, should be collected by a circular letter addressed to the physicians of the State. Accordingly, the following list of questions was prepared and printed, and a copy, with a stamped envelope enclosed, was sent to a physician in each city and village of the State.

WATER SUPPLY.

1. What is the source of the chief water supply of your town?
2. State if a system of water works is in use; if not, if one is contemplated.
3. If water is taken from a river or stream, give (*a*) its name?
    (*b*) maximum and minimum size, with average rate of current at such times,
    (*c*) general character of the water.
    (*d*) the distance and names of the nearest towns above and below you.
4. Please state (*a*) the relative position and distance from your town of the supply pipe?
    (*b*) whether reservoirs are used, their capacity and mode of construction?
    (*c*) whether any process for filtering or purifying is used and what this is?
5. What is the average amount of water furnished each day?
6. To what extent is well water used?
7. What kind of wells are in use?
8. What is their usual depth?
9. At what depth is artisian water found, and what are its chemical properties and extent of flow?
10. What is the general character of the soil in which wells are situated?
11. To what extent are they liable to contamination from the proximity of privy vaults, cess-pools, etc.?
12. What was the condition of the wells during the drought of the preceding months?
13. Was there, during this time, an unusual prevalence of any form of disease, seemingly due to this condition?
14. To what extent is cistern water used for drinking purposes?

15. Is it generally filtered, and if so, before or after storing?
16. How are the cisterns usually constructed?
17. Have you observed cases of sickness attributable to the use of impure water?
18. Please state, generally, the nature and amount of such sickness?

DISPOSAL OF SEWAGE.

1. How many miles of sewers in your town?
2. About how many "house connections" have been made?
3 How are the sewers ventilated?
4. What is the size of the main sewer?
5. What is the average size of the latterals?
6. Where do the sewers discharge?
7. Has this caused noticeable pollution of the stream, river, lake, etc., into which they empty?
8. To what extent are privy-vaults in use?
9. What is the average size and depth of these?
10. Are they usually cemented?
11. Is their construction, emptying, etc., regulated by ordinance or rule of board of health?
12. To what extent are dry-earth closets in use?
13. What is the usual method of disposing of night-soil, kitchen-garbage, house-slops, etc.?

Any further information in regard to the sources of pollution to which your water supply is liable, will be thankfully received.

The following replies, arranged alphabetically, as to counties and towns, were received. The populations given are estimates, taken from the Ohio Directory for 1888.

A summary to the answers of the more important questions, will be found immediately following the replies:

ADAMS COUNTY.

WEST UNION—POPULATION, 1,000.

REPLIES BY W. K. COLEMAN, M. D.

Water Supply.

1. Dug wells.
2 None in use; none contemplated.
3. No water taken from river or stream.
7. Dug wells.
8. Thirty feet.
9. No artesian wells.
10. A rock, semi-free stone and limestone lies about four feet under soil and yellow clay.
11. There is danger of contamination; but no sickness here has ever been attributed to wells.
12. Most of them were very low.
13. There was an unusual number of cases of typhoid fever; but with two exceptions they were contracted away from home.
14. Only a few families rely on cisterns exclusively.
15. It is not generally filtered.
16. Partly in the rock, and walled with brick and cemented
17. Yes; in the country.
18. Disordered digestion; fever resembling typhoid, but lasting only eight to ten days, of mild character.

Disposal of Sewage.

8. Used exclusively.
9. Four by six by four.
10. No.
11. No.
12. Not much used.
13. Usually thrown in piles, and at the convenience of each party it is hauled out for manure.

Have abundance of good well water, and, judging by the healthfulness of our village, the water is generally free from contamination.

WINCHESTER—POPULATION, 800.

REPLIES BY C. S. CORBOY, M. D.

Water Supply.

1. Wells.
2. None.
3. (c) Good; limestone.
6. Altogether wells and cisterns.
7. Dug wells; average of twenty feet in depth.
9. Don't know.
10. Clay.
11. Most of the privy vaults are dug three

ADAMS COUNTY—Continued.

to ten feet below the surface; do not think the contents will filter through this soil.
12. Very low.
13. Typhoid fever was more prevalent than usual; think it may have been due to the contamination of one or two wells.
14. Very slight.
15. Not generally filtered.
16. Walled with brick; cemented.
17. Think it may have produced our typhoid last summer.
18. The typhoid is the only disease that could have any connection with it, as with this exception, it has been very healthy.

Disposal of Sewage.

1. None.
8. Universally.
9. Three to ten feet deep, at which depth they strike rock.
10. No.
11. No.
12. None.
13. "Go as you please."

I do not think our water supply is in danger of contamination, except from privy vaults, and the habit some people have of throwing the discharges from typhoid patients on to the surface without disinfection.

ALLEN COUNTY.

BLUFFTON—Population, 1,500.

REPLIES BY J. R. CLARK, M. D.

Water Supply.

1. Wells.
2. No.
7. Dug wells, walled with brick or limestone.
8. Twenty to thirty feet.
10. Clay.
11. They are comparatively free from contamination.
12. Water supply failed in some of them.
13. No.
14. Very little.
15. No; but what is is filtered before storing.
16. Brick and cement; but there are some wooden.
17. No.

Disposal of Sewage.

8. General.
10. No.
11. No.
12. None that I know of.
13. Hauled away by the dray.

WEST CAIRO—Population, ——.

REPLIES BY FRANK EWING, M. D.

Water Supply.

1. Wells. Our water is derived from gravel underlying surface from twelve to twenty-five feet.
2. No.
7. Dug wells, walled with limestone or brick.
8. Twelve to twenty feet.
10. Clay loam.
11. Privies will average about fifty feet from wells; vaults not walled; no cesspools.
12. The water supply was quite low, but few wells entirely failed.
13. No; there were a few cases of continued fever, but they were not confined to any portion of town, or any particular wells.
14. Almost none.
15. No filters.
16. Mostly wooden.
17. No; not directly.

Disposal of Sewage.

1. None; have some tile and open ditches.
8. Exclusively.
9. About two by six, and two to three feet deep.
10. No.
11. No.
12. None.
13. Usually thrown into privy vaults, alleys, back yards, etc., or fed to pigs or chickens kept on same lot.

ASHLAND COUNTY.

HAYESVILLE—Population, 800.

REPLIES BY M. Q. WHITE, M.D.

Water Supply.

1. Wells, most of which are dug; but few drilled wells or cisterns used for drinking water.
2. No; none in contemplation.
7. Mostly dug.
8. From twenty-five to forty feet.
9. There are no artesian wells; drilled wells here are generally seventy feet; water very hard.
10. Clay, with stone at the depth of ten or twelve feet.
11. Usually not much with us, as we have our privies well looked after.
12. Low, but water very pure; all drilled wells were unaffected by the drought.
13. No; there has not been a case of typhoid in the township for three or four years.
14. Very little.
15. No.
16. Walled with brick, and cemented with lime.
17. No; our water is very pure.

Disposal of Sewage.

8. Exclusively.
9. All grades and sizes, but kept well cleaned.
10. No.
11. Under the control of board of health.
12. None.
13. Everybody is responsible for the filth of his premises.

Our water is pure. There is no more healthy place in Ohio than ours; aside from diseases arising from changes of atmosphere we have no acute sickness.

JEROMESVILLE—Population, 400.

REPLIES BY D. E. POCOCK, M.D.

Water Supply.

1. From wells.
2. No.
3. (c) Moderately soft, and free from sulphur; good quality.
7. Mostly dug; some few driven.
8. Twenty to forty feet.
9. None.

ASHLAND COUNTY—Continued.

10. Gravelly and stony.

11. To usual extent found in villages of four or five hundred inhabitants on rolling elevation.

12. Mostly low, and one-half failed to supply sufficient for house use.

13. No.

14. Very moderate.

15. No.

16. Of brick and lime cement.

17. Yes.

18. Four cases of typhoid fever; two in two families using water from the same spring, conducted to an imperfect box in a filthy ditch.

Disposal of Sewage.

1. None.
8. General.
9. Three to five feet.
10. No.
11. No.
12. None.
13. Careless.

MIFFLIN—Population, 300.

REPLIES BY C. D. SACKET, M.D.

Water Supply.

1. From three springs, just at the east limit of the town.

2. The water flows through pipes to different parts of the town.

4. (*a*) The springs are within the town. (*c*) No process of filtering is considered necessary.

5. Probably two hundred barrels.

6. About one-third use well water.

7. Some few dug wells of late years; drilled wells with 3-inch iron tubing.

8. From twenty to seventy feet.

10. The soil is sandy and underlaid with gravel; top soil mixed with clay.

11. There has never been any indications of contamination as yet.

12. A few of the shallow dug wells failed.

13. There has been almost no sickness in the town for the past eight months.

14. Not at all.

Disposal of Sewage.

1. No sewers proper; town being built upon a side-hill; there is abundant natural drainage.

8. They are in general use.

9. Dephth generally about six feet.

10. No.

12. Not used.

13. Kitchen garbage and house-slops generally fed to the pigs.

The only possible source of pollution would be from the close proximity of a grave-yard to the south part of the village, but that does not appear to have done any harm as yet.

ASHTABULA COUNTY.

ASHTABULA—Population, 6,000.

REPLIES BY A. W. HOPKINS, M.D., H. O.

Water Supply.

1. Wells.

2. One about completed; not yet accepted by the council.

4. (*b*) A stand pipe; built of steel plates one hundred feet high and twenty feet in diameter. (*c*) Water is obtained from a filter gather on the beach of Lake Erie.

6. Pretty much all that is used.

7. Dug wells.

8. Twelve feet on the average.

9. None here.

10. Sand and clay.

11. Most of the wells in the main part of the town must be more or less contaminated.

12. I should think from a third to one-half were dry; the rest low.

13. I think not.

14. Very few use them.

15. Before, by running through a filter.

16. Brick and water lime.

17. No.

Disposal of Sewage.

1. Two thousand and seven hundred feet is all we have.

2. Not more than fifteen or twenty, and those without traps.

3. None; except through the catch-basins, which have no traps.

4. Eighteen inches.

5. None put in yet.

6. Ashtabula Creek, about one-half mile from the Lake.

7. No.

8. Very few in use.

9. Two feet wide, and five to six feet long; four to five feet deep.

10. Yes.

11. None are to be built or used hereafter.

12. None used.

13. Night-soil is carted off out-side of the city; a part of the kitchen-garbage also. House-slops are thrown out on the surface or into cess-pools; cess-pools are prohibited by the board of health.

AUSTINBURG—Population, 350.

REPLIES BY W. O. ELLSWORTH, M.D.

Water Supply.

1. Wells.

2. No.

7. Dug and stoned up.

8. Twelve to twenty feet.

10. Water is found in quick-sand, below a clay surface.

11. Practically none.

12. Very low, and perhaps one-half of them dry.

13. Nothing prevalent.

14. No extent.

17. Not here.

Disposal of Sewage.

1. None.

CONNEAUT—Population, 1,500.

REPLIES BY J. LEE RICHMOND, M.D.

Water Supply.

1. Wells.
2. Contemplated.
6. Entirely.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

ASHTABULA COUNTY—Continued.

7. Bricked.
8. Sixteen feet.
10. Sand.
11. Large extent.
12. Water very low; many wells failed.
13. Typhoid fever.
14. Three or four families.
15. Yes; before or after.
17. Yes.
18. Several cases of typhoid in families; certainly depended on privy contamination.

Disposal of Sewage.

1. None.
8. Very general.
9. Four by five; three to ten feet deep.
10. No.
11. No.
12. One to two per cent.
13. No method; part taken to farms; slops go into the ground.

Our soil is sand; where wells are low, all slops, night-soil, etc., filters into wells readily.

JEFFERSON—POPULATION, 1,200.

REPLIES BY F. R. LOOMIS, M.D.

Water Supply.

1. Wells.
2. No.
7. Stoned or bricked wells.
8. From ten to twenty-five feet deep.
9. We have none.
10. Clay or shale.
11. There is little or no liability, owing to distance and care of privies.
12. Some were dry, but we were well supplied as a whole.
13. No.
14. But few families use it.
15. Usually filtered before storing.
16. More made of galvanized iron than of all other material combined.
17. No.

Disposal of Sewage.

1. None.
8. We have none.
12. We have not more than three or four.
13. Buried, thrown upon gardens, or carried out of town.

LENOX—POPULATION, 200.

REPLIES BY J. L. LAMB, M.D.

Water Supply.

1. This is not an incorporated town, and has no public water supply or system of sewerage.
2. No.
6. Entire supply is from wells.
7. Stoned wells.
8. Twelve to twenty feet.
10. Hard clay and slate rock.
11. Very little.
12. Many dry.
13. No.
14. None.
17. No.

Disposal of Sewage.

1. None, except private.
8. None.

ORWELL—POPULATION, 400.

REPLIES BY C. T. GROVER, M.D.

Water Supyly.

1. Wells.
7. Surface mainly; a few drilled in slate rock (hard).
8. Fifteen feet.
9. Moderate supply; fifteen to twenty-five feet in rock; hard, but pure.
10. Clay.
11. Good surface drainage.
12. Many went dry.
13. Not any.
14. Slight, if at all.
16. Iron above ground.
17. Not any.

Disposal of Sewage.

8. Entirely.
9. Shallow.
10. No.
11. No.
12. Not much.
13. Surface distribution without system.

PIERPONT—POPULATION, 700.

REPLIES BY H. E. HOLCOMB, M.D.

1. Wells.
3. (c) Hard.
7. Dug and stoned.
8. Fourteen to sixteen feet.
10. Clay top; water found in quick-sand.
12. A great many failed.
13. No.
14. Not at all.
17. No.

Disposal of Sewage.

12. Exclusively.
13. Emptied in garden.

SOUTH NEW LYME—POP'TION, ABOUT 1,000.

REPLIES BY JOHN L. CHAPEL, M.D.

Water Supply.

1. Wells.
2. No.
7. Common dug; either stoned or bricked.
8. Eighteen to twenty feet.
9. There is none within ten miles.
10. Clay, and clay and gravel mixed.
11. There has been very little attention paid to location of wells, but owing to sparce population, wells are very little affected.
12. Many of them became dry; some that had never been known to fail before.
13. I think there was, as the water became low.
14. Very little, if any.
17. Yes.
18. It has been mostly among children or young people, commencing with fever, followed by vomiting, and in almost every case terminating in a jaundiced condition; have not seen any fatality from it, but in a number of families it has attacked every member.

Disposal of Sewage.

8. Not common.
11. No.
12. Not in use.
13. Emptied on the surface in some out of the way place.

The greatest source, I think, of possible contamination is in locating the well near barns and other buildings, and carelessness about cleaning the wells thoroughly. To illustrate: I was visiting a family where a well, twenty feet deep, became impure; I ordered it cleaned, and in the bottom they found articles that had been lost for thirty years.

ATHENS COUNTY.

COOLVILLE—POPULATION 350.

REPLIES BY E. L. CARLTON, M. D.

Water Supply.

1. Wells.
2. No.
6. Nearly every family has a well and cistern.
7. Old fashion, dug in solid rock.
8. From twenty to fifty feet.
9. Never has been tried.
10. Not more than fifteen feet of clay, then comes sandstone or blue, hard rock.
11. The people are not as careful as they should be to protect their wells from surface water.
12. About half the wells in town went dry, but enough held water to supply the town.
13. No.
14. Very little.
15. Neither.
16. A round hole is dug about ten feet deep and plastered with water lime.
17. Very seldom.

Disposal of Sewage.

1. None.
8. Most privies have no vaults, or at least very shallow ones, and are cleaned out often. We find by keeping plenty of coal ashes mixed with fecal matter it is easily carted onto the garden.
10. No.
11. No.
12. None.
13. Nearly every house in town has a lot five rods by twelve, and they all have gardens, which get the benefit of such things.

Our town is on a hill on the right bank of Big Hocking, about five miles from the Ohio River. The solid rock is no where more than twenty feet from the surface, and within a radius of one mile there are as many as fifty never-failing springs, and as many wells which never go dry.

GLOUSTER—POPULATION, 300.

REPLIES BY E. F. DANFORD, M. D.

Water Supply.

1. Wells that are fed from hill veins and from Sunday Creek.
2. No.
7. Shallow walled wells, with bucket or different kinds of pumps.
8. About sixteen feet.
10. Sandy, with some blue clay near the bottom.
11. In many instances privy vaults and wells are not more than fifty to seventy-five feet apart.
12. Many failed entirely, and almost all very low.
13. No.
14. Not at all.
17. No.

Disposal of Sewage.

1. None.
8. Almost all have vaults.
9. About two by four, and six feet deep.
10. No.
11. Not incorporated.
12. I know of but one.
13 Throwing it into the alleys, I suppose.

LEE—POPULATION 600.

REPLIES BY B. C. VORHES, M. D.

Water Supply.

1. Wells.
2. No.
7. Walled wells.
8. From twelve to thirty feet.
10. Thin soil—light clay.
11. To a considerable extent.
12. Low or dry.
13. Very little sickness; none that could be attributed to bad water.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. Almost altogether.
9. Three feet by two and a half by five.
10. No.
11. No.
12. Very little.
13. Throwing on ground or into privy vaults.

MARSHFIELD—POPULATION 200.

REPLIES BY C. BARKER, M. D.

Water Supply.

1. Wells.
2. Neither.
8. Ten to thirty feet.
11. Very little.
12. Most very low.
13 No.
14. None.
17. No.

Disposal of Sewage.

1. No sewers.
8. None at all.
13. Back yard and privies.

MILLFIELD—POPULATION 125.

REPLIES BY A. J. LEARNED, M. D.

Water Supply.

1. Wells.
2. No, and none contemplated.
6. Altogether for drinking and culinary purposes.
7. Dug wells, walled with stone.
8. Fifteen to forty feet.
10. Clay.
11. But little.
12. They were very low, and the water saturated with the salts of lime and containing traces of iron.
13. No; the season was more healthy than the corresponding season in former years.
14. None; it is used exclusively for washing.
17. Not positively.

Disposal of Sewage.

1. There is none; there are a few common tile drains.
6. The drainage is all into Sunday Creek.
7. No.
8. No vaults are used.
12. They are not used.
13. Sprinkling with lime or dry earth, and carting to the fields for fertilizing purposes.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this R port.

ATHENS COUNTY—Continued.

No organic matter can enter the wells except from the surface drainage, and this is easily prevented; hence they are quite free from such pollution.

NELSONVILLE—POPULATION 5,000.

REPLIES BY CHAS. W. CABLE, M. D.

Water Supply.

1. Wells and cisterns and canal.
2. No; not contemplated.
6. Altogether.
7. Drove and dug.
8. Twenty to thirty feet.
9. Never tested.
10. Clay and gravel.
12. Large majority were dry.
13. No.
14. Very little.
15. No.
16. Brick and cement.
17. Yes.
18. Typhoid fever.

Disposal of Sewage.

6. Have none.
8. General.
9. 4 by 8 and 10 feet deep.
10. No.
11. No.
12. Not used.
13. Deposited in back yards and carried off by surface drainage.

PLEASANTON—POPULATION 107.

REPLIES BY E. M. BEAN, M. D.

Water Supply.

1. Wells dug and walled with freestone.
2. Not any.
8. About thirty feet.
10. Limestone soil mostly.
11. Not any.
12. All very low and some dry.
13. Not any; there was but little sickness in our village during the dry months.
14. But little.
15. It is before.
16. Walled with brick or freestone, and cemented.
17. Not any.

Disposal of Sewage.

8. Nearly every family uses them, but they are at such a distance from wells there is no contamination of the water.

PLEASANT VALLEY—POPULATION 85.

REPLIES BY H. G. WITHAM, M. D.

Water Supply.

1. Wells—a never-failing supply.
2. None in use; none in contemplation.
7. Dug, and walled with stone.
8. From 15 to 25 feet.
9. None here.
10. Clay—at bottom sand.
11. I think they are not liable to contamination from any cause.
12. Plenty of water.
13. No unusual prevalence of any disease.
14. None used for drinking purposes.
17. No cases of sickness.

Disposal of Sewage.

1. None.
2. None.
8. None; privies without vaults.
13. Runs off in drains.

AUGLAIZE COUNTY.

NEW BREMEN—POPULATION, 1,300.

REPLIES BY CHARLES N. POTTS, M. D.

Water Supply.

1. Miami Canal; only used for mills.
2. No.
4. (*b*) Reservoirs; only used for canal supply (Mercer and Shelby County Reservoirs). (*c*) None.
6. General use,
7. Chain and iron pumps; wells average thirty feet deep; water good and pure.
8. Thirty feet.
9. None tried, except large vein struck at gas wells within five miles, and flow strong and never-ceasing.
10. Clay; near here gravel.
12. Low, and farmers complaining; many entirely dry, but now in good shape.
13. About thirteen typhoid patients among three physicians. Presumed to originate from low state of water.
14. None.
17. None, except as above.

Disposal of Sewage.

1. None.
2. None.
8. Like all small towns, generally dug deep.
9. Five by eight.
10. Very few.
11. Yes; most of them drain by small piping above town.
12. None.
13. Carried out of town to ponds at edge of canal.

For a small town of 1,300, it is conducted on good hygienic measures. Up to ten years ago it was different.

ST. JOHNS—POPULATION, 350.

REPLIES BY J. M. SHAW, M. D.

Water Supply.

1. Wells from ten to thirty feet deep.
2. None.
3. We have no large streams. (*c*) Limestone.
7. Generally dug; old-fashioned.
8. From ten to thirty feet.
9. We have none.
10. Gravel and blue clay.
11. Very little as a general rule.
12. A great many were dry, or nearly so.
13. Not any.
14. None used for that purpose.
17. None.

Disposal of Sewage.

1. None except open ditches along sidewalks.
8. Generally; that is every house has one.
9. From four to six feet.
10. No.

AUGLAIZE COUNTY—Continued.

11. No.
12. Sparingly.
13. Night soil in privies; kitchen slops thrown out or fed to the pigs.

ST. MARY'S—POPULATION, 1,745.

REPLIES BY C. H. PHELPS, M. D.

Water Supply.

1. Wells and cisterns.
2. None now, nor any contemplated.
6. Almost entirely.
7. Dug wells, and walled with brick.
8. Average depth about twenty-five to fifty feet.
9. About two hundred feet.
10. Surface soil of loam, sub-soil of yellow clay; below yellow clay is black clay and gravel.
11. They are liable if privy and cess-pools are in line of veins of water, which usually run towards the river.
12. The majority went dry.
13. No; there has been less than average amount of sickness, no one disease being very prevalent.
14. Not generally; not more than one in a hundred.
15. It is generally filtered through common gravel and sand.
16. Walled with brick, and cemented.
17. Not during past year.

Disposal of Sewage.

8. In general use.
9. Eight to twelve feet deep.
10. No.
11. No.
12. Only a few.
13. Night soil is usually emptied in privy vaults; garbage is fed to pigs or emptied into drains.

On cleaning my well several years ago, I found the veins of water came from the west, and ran east. As I had a privy vault standing west thirty-eight feet, I concluded to try an experiment. I put some permanganate of potash in the privy vault, and I found that it slightly discolored the water in the well. I immediately removed the vault further south.

WAPAKONETA—POPULATION 3,300.

REPLIES BY C. BERLIN, M. D.

Water Supply.

1. By means of wells.
2. No; none contemplated so far.
6. All that is used.
7. Dug and drove wells.
8. Twenty to thirty feet.
9. Have not found any.
10. Clay soil with sand below.
11. To the extent of ordinary clay soil absorption, no danger unless in close proximity.
12. All were very low, but the water was mostly pure.
13. None whatever; the health during the drouth was extremely good.
14. To a very limited extent.
17. I have not, and heard of none.

Disposal of Sewage.

1. We have no regular sewerage system, a few from cellers run into the river.
8. They are generally in use.
9. Mostly eight or ten feet deep.
10. Only a very few.
11. No.
12. None.
13. Generally thrown out and left to evaporate; night-soil is thrown into privies.

There are none; slaughter houses are generally in the country, two miles from the city and we are free from all other causes of pollution.

WAYNESFIELD—POPULATION 306.

REPLIES BY GEO. W. VICKERS, M. D.

Water Supply.

1. From wells.
2. No.
6. Exclusively.
7. Drove and dug.
8. About fifty feet.
10. Sandy.
11. To a very small extent.
12. Some of them dry, the rest very low.
13. Yes, typhoid fever and remittent fever.
14. Do not think it is used at all.
17. Cannot say that I have.

Disposal of Sewage.

1. None.
8. There are none.
10. No.
11. No.
12. Not at all.
13. Thrown on the manure pile.

BELMONT COUNTY.

BARNESVILLE—POPULATION 3,000.

REPLIES BY W. J. M'CALVIN, M. D.

Water Supply.

1. Wells open and with pumps.
2. No water works; none contemplated.
6. Entirely in city limits for man and beast.
7. Old windlass, chain, drill and pump.
8. From fourteen to sixty feet.
9. None.
10. Lime and sandstone.
11. In some localities surface water contaminates in rainy seasons; privy vaults in miserable condition.
12. Three-fourths of water supply not suitable for family use; many wells with no water in for weeks.
13. Yes, there seemed to be a general typhoid condition, with symptoms of bowel trouble.
14. If any, very little.
16. Walled with brick and cemented.
17. Yes, more especially last summer.
18. Generally starting with diarrhœa; no fever or febrile excitement for first few days, then early development of typhoid fever of severe form.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

BELMONT COUNTY—Continued.

Disposal of Sewage.

1. Don't know.
2. Very few.
3. Sewers are mostly open, running off to small streams.
6. Into heads of small streams; water runs four different directions out of town.
7. None that have ever been reported.
8. Some surface, mostly vaults; probably nine-tenths are vaults in low situations.
9. Vaults are regulated by ordinance—eight feet deep by four by six.
10. No.
11. Yes.
12. None used that I know of.
13. Usually disposed of by mixing with stable manure and taken to farm lands.

The surface water, after heavy rains, is one of the misfortunes of this locality. Our water is very cool and refreshing, hard, and producing deposit of lime when boiled.

BELLAIRE—Population 12,000.

REPLIES BY D. Q. STEERE, M. D.

Water Supply.

1. Ohio River.
2. We have water-works.
3. Ohio River. (*c*) Soft, containing considerable refuse and sewage from Wheeling and other towns above. (*d*) Wheeling, Bridgeport and Martins Ferry, from two to six miles above.
4. (*a*) Three; two are one hundred feet from shore, and one four hundred feet above. (*b*) One reservoir, stone wall, cemented; cannot give capacity. (*c*) None whatever.
5. Two million gallons.
6. Very little used.
7. Where any, the dug well is used.
8. Do not know.
9. None here at all.
10. Gravelly.
11. As much as possible considering the open nature of the soil.
12. Very low.
13. There was not; the last summer has been very healthy, no disease of any sort prevailing.
14. I think but very slightly.
17. In a few cases I have.
18. Last winter there were several cases of typhoid fever among families that used the water from one well.

Disposal of Sewage.

1. About eight.
2. I cannot tell, but most on lines of sewers.
3. Not at all. only through faulty traps.
4. From eighteen to thirty-six inches; there are seven main sewers.
5. About twelve inches.
6. In Ohio River in front of city.
7. During low water it has.
8. About two-thirds.
9. Four by two and nine feet.
10. Are not.
11. By rule of board.
12. Not any that I know of.
13. Night soil carted to river; slops, garbage, etc., thrown into yards, vaults, etc., where there are no sewers.

Our water supply is polluted to a very dangerous extent by Wheeling, and also by drainage from the upper part of our own city, being all drained into the river above our supply pipes

FLUSHING—Population 350.

REPLIES BY J. V. WEBSTER, M. D.

Water Supply.

1. Wells, and very few of them.
2. No.
6. Wells and cisterns altogether.
7. Old-fashioned mostly.
8. Forty feet.
10. Limestone soil.
11. No attention paid to this.
12. Almost no water.
13. No.
14. Small extent.
15. No.
16. Walled and cemented.
17. Yes.
18. No great amount.

Disposal of Sewage.

8. Almost all.
9. Four feet deep.
10. No.
11. No.
12. Not at all.
13. Use it on gardens.

The water supply is very bad; no attention paid to it, or very little.

GLENCOE—Population 300.

REPLIES BY J. A. CLARK, M. D.

Water Supply.

1. Wells.
2. None.
6. Exclusively for culinary purposes.
7. Dug and walled.
8. Eight to ten feet.
10. Gravelly.
11. Many are situated within fifty feet of well.
12. Some failed, others low.
13. Was not.
14. None.
17. Not positively this season; two years ago some.
18. Typhoid fever; four families affected with the disease, all having used from one well.

Disposal of Sewage.

8. General.
9. Four by six feet.
10. Are not.
11. No.
13. No special mode.

HENDRYSBURG—Population 400.

REPLIES BY W. M. JONES, M. D.

Water Supply.

1. Wells and springs.
2. No, nor none contemplated.
3. (*c*) Our water is pure.
6. Our water is nearly all from wells.
7. Common pumps in nearly all.
8. Sixteen to thirty feet.
9. None.
10. Limestone soil.
11. Generally a safe distance away.
12. Most of them quite low, but few dry.
13. I can't say there was, as this has been a healthy summer here.
14. None.
17. None that I am aware of.

BELMONT COUNTY—Continued.

Disposal of Sewage.

1. None.
8. We have the common privy.
9. Perhaps two or three feet.
10. No
11. No particular rule.
12. None.
13. Each family provides their own method of disposition.

SAINT CLAIRSVILLE—Population 1,500.

REPLIES BY S. L. WEST, M. D.

Water Supply.

1. Wells.
2. Contemplated.
3. (*c*) Lime, clear, hard.
6. Universal.
7. Dug ones predominate.
8. Twenty-five to sixty feet.
10. Limestone soil.
11. They are generally above such; not liable to any great degree.
13. No.
14. None at all.
17. No.

Disposal of Sewage.

8. Universal.
9. Four by five by six feet.
10. No.
11. No.
12. None.
13. Private families dispose of their own to suit themselves; public is removed in boxes and thrown on fields.

BROWN COUNTY.

DECATUR—Population 275.

REPLIES BY L. C. LAYCOCK, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use and none contemplated.
6. Wells are used almost entirely.
7. The ordinary well walled with stone.
8. From fifteen to twenty-five feet.
10. Limestone.
11. To a very slight extent, if at all.
12. The majority "went dry," and all were very low.
13. No.
14. But very little cistern water is used.
15. Filtered before storing.
16. Of brick, and cemented.
17. Yes.
18. Two cases of typhoid fever in a family using water from a spring at the foot of a hill, a barn and cow-yard being on the hill and in the drain above the spring.

Disposal of Sewage.

1. No sewers.

FAYETTEVILLE—Population 600.

REPLIES BY J. M. HALL, M. D.

Water Supply.

1. Wells and cisterns.
7. Stone walled.
8. From twenty to thirty feet.
10. Limestone soil.
11. Not much exposed in that direction.
12. During the continued drouth about one-third were dry.
14. A limited number use cistern water.
15. Before storing.
16. Walled with brick, then cemented.

Disposal of Sewage

8. The vaults are mostly on top of ground.
11. Those who have vaults, built twenty years ago, have never cleaned them.
13. Night-soil of privies, with no vaults is carted away with other garbage.

FINCASTLE—Population 200.

REPLIES BY J. L. BAIRD, M. D.

Water Supply.

1. Wells.
6. Wholly.
7. Dug by hand, walled with rock.
8. Fifteen to forty feet.
9. None in this section.
10. Limestone.
11. Not very great, owing to the distance apart, which is ordinarily five rods or more. Our public well is scarcely used, and would receive surface drainage from the street.
12. Many of them failed. The water was strongly impregnated with lime in such as did not.
13. Not in town, but in the country; such seemed to be the case to a considerable extent.
17. None which could positively be so determined.

Disposal of Sewage.

8. I believe the prevailing kind to be a hole dug in the ground to suit the fancy of the employe.
9. Probabty 4 feet long, 2 feet wide and 2 to 3 feet deep.
10. No.
11. No.
12. Not at all.
13. Usually disposed of in about the easiest possible way, simply thrown out; some feed their slops to pigs.

GEORGETOWN—Population 1,350.

REPLIES BY Y. STEPHENSON, M. D.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
6. Three-fourths; cistern water one-fourth.
7. Dug.
8. From 20 to 60 feet.
9. No artesian wells.
10. Clay.
11. One-fourth of them.
12. One-fourth of them dry.
13. No.
14. One-fourth of them.
15. Filtered before storing.
16. Brick and cement.
17. No.
18. None.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

BROWN COUNTY.—Continued.

Disposal of Sewage.

1. None.
8. Three-fourths.
9. Six by six feet.
10. No.
11. No.
12. One-fourth.
13. It is thrown on the ground.

RIPLEY—Population 3,500.

REPLIES BY W. A. DIXON, M. D.

Water Supply.

1. Cisterns, private wells and public drove wells into the sand.
2. No; subject of reservoir water-works being agitated.
6. Very largely.
7. Mostly deep drove wells.
8. About 100 feet.
9. Never ascertained yet.
10. Clay, loam, sand and gravel. They go through beds of blue clay before reaching water.
11. We think our public wells are not liable to contamination, but private wells are.
12. Public wells furnished abundance; others and the cisterns went dry.
13. Had more cases of fever of typhoid type than usual.
14. Very largely.
15. Not generally, but by many before storing.
16. With brick and cement.
17. A number of cases in country as well as town.
18. A low form of fever like typhoid, and sometimes every member of the family affected.

Disposal of Sewage.

1. No sewers.
8. By every family.
9. From four to six feet square, and probably ten feet deep.
10. No.
11. No.
12. Very few; only four or five in the town.
13. Hauled to suburb and buried; the kitchen garbage and slops thrown in the alleys.

BUTLER COUNTY.

BLUE BELL—Population, 100.

REPLIES BY J. M. HUNT, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use, nor none contemplated. (*c*) Limestone water.
6. Altogether.
7. Driven and dug.
8. Thirty-five to forty-seven feet; some ten.
9. There are none here.
10. Deep black soil; full of water, and necessary to tile all cellars.
12. Very low; but as yet there has been no disturbance of health from water supply.
13. Very healthy.
14. To no great extent.
15. Yes, by charcoal and gravel as it runs in.
16. Some by cementing on the ground. Mine is bricked entirely from bottom to top.
17. Not in the village, but in the country about.

Disposal of Sewage.

1. All runs off through an open ditch.
6. The contents of ditch runs into Dick's Creek.
7. No.
8. Altogether
9. Common country privies—four feet square and six feet deep.
10. A simple hole walled up.
11. We have none.
12. None to my knowledge.
13. Kitchen garbage and house slops fed to pigs and cows.

Our wells are all dug to a level with Dick's Creek bed. Surface water runs in some of the wells and into the cistern.

HAMILTON—Population, 15,000.

REPLIES BY JOHN M. PARKS, M. D., H. O.

Water Supyly.

1. Water works.
2. Reservoir and direct pressure from twenty artesian wells—Wagner's system. (*c*) Good; some little iron; not analyzed. (*d*) Twelve miles above and ten below.
4. (*a*) Above the city; five hundred feet from pump-house, and pump house in corporation. (*b*) Yes; capacity 6,763,885. (*c*) None.
5. Five hundred thousand gallons.
6. About one-half of the citizens.
7. One-half open wells and one-half driven.
8. Forty feet.
9. Seventy-five to eighty feet; when the pumps are running at full capacity, 300,000 gallons in twenty-four hours; the water not analyzed.
10. Gravel sub-soil. The soil will average three feet of gravel to water.
11. None whatever so far as hydrant water is used; but wells are very liable to contamination.
12. Low and filthy, and but few used.
13. None.
14. Very limited.
15. Yes, and before storing.
16. Brick cemented.
17. Not this season.
18. We have had a very healthy summer; a few cases of typhoid fever; no general diseases.

Disposal of Sewage.

1. Not to exceed one mile.
2. Not more than a dozen.
3. Not at all; they are flushed once or twice a month.
4. We have no system of sewerage.
6. Into the river.
8. Almost universal.
9. Twelve feet deep and four wide.
10. Not one.
11. In depth only, and emptied by order of Board of Health when deposited within three feet of ground surface.
12. There are not one-half dozen in the city.
13. Dumped in the river; some complaint by those living below the city.

The Great Miami River is a great drainage of filth from its source to its terminus in the Ohio River. The offal from all cities, towns, and paper mills, etc., empties into it.

BUTLER COUNTY—Continued.

MILLVILLE—Population, 300.

REPLIES BY W. D. HANCOCK, M. D.

Water Supply.

1. Driven wells.

3. (*c*) Clean and clear; filtered through sand and gravel.

6. One-fourth.

7. Open wells, dug in the blue clay and limestone.

8. Twelve to thirty-five feet.

10. Alluvial on gravel and sand, except on bluffs.

11. Very limited, as only a few shallow, open wells are used.

12. Shallow wells in gravel soon went dry, necessitating the driving of pipes further into the gravel. Wells on the up lands were more or less affected; some went dry.

13. No.

14. None.

17. Not in this community.

OXFORD—Population 2,000.

REPLIES BY J. B. PORTER, M. D.

Water Supply.

1. Wells and cisterns.

2. No; none contemplated.

3. (*c*) Limestone water.

6. Almost exclusively.

7. Walled wells, no driven wells.

8. Twelve to forty feet.

9. Have none.

10. Clay soil, limestone.

11. Very liable, I think.

12. Very low; great many were dry.

13. No. It was so very dry the filth from vaults, etc., did not permeate the soil, and hence did not enter the wells; more sickness since rain.

14. To only a limited extent.

15. Yes, before storing.

16. With brick and cement.

17. Yes, at various times.

18. Typhoid fever and diphtheria. Some years we have a good deal of typhoid, generally after a dry season; may have this season yet.

Disposal of Sewage.

1. Have none.

8. Almost exclusively.

9. Four to ten feet.

10. No.

11. No.

12. None.

13. Vaults filled up or contents hauled away; kitchen garbage, house slops, thrown on the gardens, gutters and alleys.

Wells contaminated from surface water after rains.

SEVEN MILE—Population 500.

REPLIES BY A. J. WESCO, M. D.

Water Supply.

1. Wells and cisterns.

2. Water works being agitated before council.

6. Almost exclusively.

7. Dug and drove.

8. About eighteen feet.

9. None here.

10. Black loam and gravel sub-soil.

11. Ten or twelve feet.

12. Very low; water constantly riley and necessarily bad.

13. We had more fever here during the past drouth than for a number of years; malarial and typhoid.

14. Not much used.

15. Before using.

16. Dug to the depth of ten or twelve feet, then walled and cemented.

17. Low and impure water was the fault.

Disposal of Sewage.

8. None.

12. Universally.

13. Thrown out and allowed to decompose.

SOMERVILLE—Population 375.

REPLIES BY J. J. STRECKER, M. D.

Water Supply.

1. Wells.

2. None.

6. Exclusively for domestic use.

7. Excavated wells.

8. About twenty-five feet.

9. There is none.

10. Sand and gravel.

11. Not any.

12. Very low, some dry.

13. No disease at all.

14. Very little.

15. No filtering here.

16. Dug into the ground and cemented.

17. I have not about here.

Disposal of Sewage.

1. None.

8. General.

9. About four by eight feet.

10. No.

11. No.

12. None.

13. Thrown into the alleys.

This is a small town of 375 inhabitants, with a creek running through it, called Seven Mile.

CARROLL COUNTY.

CARROLLTON—Population, 1,650.

REPLIES BY J. R. WILLIAMS, M.D.

Water Supply.

1. Wells principally, but also a few springs.

2. Not any, but some talk of having them.

6. Almost entirely.

7. Generally dug wells, but have in town about ten or twelve drilled wells.

8. From twenty to forty feet; probable average less than thirty feet.

9. Can not tell.

10. Clay, mostly.

11. Most are not liable.

12. The wells were the lowest, and more went dry this last fall than have for years. It has been very dry here since hay harvest.

13. No.

14. Not much; only two in the town used for drinking.

15. Yes; as it runs into the cistern.

16. Walled with brick, and cemented; but a few are just cemented to the earth and gravel.

17. Certainly; at times.

18. Typhoid, but not much in amount.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CARROLL COUNTY—Continued.

Disposal of Sewage.

1. None; only for drainage.
2. None; only as waste pipes.
8. Almost entirely; we have dug privies.
9. For private use, six by four and six feet deep; but some are much deeper.
10. No; usually boarded up.
11. No.
12. Almost entirely.
13. Usually thrown in a pit or on the ground, and then hauled away.

HARLEM SPRINGS—POPULATION, 234.

REPLIES BY JOHN B. FRANCE, M.D.

Water Supply.

1. Springs and wells.
2. None, and none contemplated.
3. (*c*) Soft.
6. Generally in use; some of our citizens have springs, and use them for their supply.
7. Dug wells.
8. From fifteen to sixty feet; depending on location.
9. None.
10. Very sandy.
11. Generally favorably situated.
12. None went dry, but were quite low.
13. No; our village and vicinity were as healthy as I ever knew them; I have lived here about forty years.
14. Not used at all; only for washing.
17. I have; but only in one family.
18. Typhoid fever; the family consisted of ten persons; eight took the fever; all recovered.

Disposal of Sewage.

8. All have them.
9. I presume from three to five feet.
10. No.
11. No.
12. None as far as I know.
13. I believe some use it for fertilizing the gardens.

We have one of the finest localities for water I have ever seen. The most of our farmers have springs of living water which they use, and as a matter of course, this is one of the healthiest localities to be found in the State.

MECHANICSTOWN—POPULATION, 200.

REPLIES BY JOHN M. WATT, M.D.

Water Supply.

1. Wells and springs.
6. Almost entirely.
7. Wells dug, and walled up with stone.
8. Thirty to fifty feet.
9. Can not say.
10. Slate stone; a light sandy soil for the most part.
11. Each family has privy within fifty to one hundred feet of well.
12. A large per cent. was dry; most all others very low.
13. No; the season has been healthy; no contagious diseases except measles which was imported from a distance.
14. None.
17. No.

SHERODSVILLE—POPULATION, 1,000.

REPLIES BY J. T. BEALL, M.D.

Water Supply.

1. Wells and springs.
2. None in use nor in contemplation.
6. With exception of one or two natural springs, wells furnish all potable water used.
7. The greater number are bored wells cased with iron tubing.
8. Twelve to fifty feet.
9. This has never been tested.
10. Sandy; the town being located partly on the first and partly on second creek bottom.
11. To a large extent in the lower part of the town.
12. A large number on the lower bottom, and a few on higher ground failed almost entirely.
13. None whatever.
14. None used.
17. Not in town nor elsewhere, recently.

Disposal of Sewage.

1. No sewers.
8. Largely used; in fact, there is no other method of disposing of excreta.
9. Four by four by six feet.
10. Never heard of one being cemented.
11. No; town unincorporated, and have no board of health.
12. None used.
13. With perhaps the exception of the first, that portion of the surface of our mother earth in closest proximity to the back-door receives the most of it.

The above is certainly a remarkable exhibit—scarcely creditable, in fact, but such are the facts. The fact that the town is of recent growth, and is overflowed by the creek on an average of once a year, partly explains our phenomenal exemption from epidemic disease.

CHAMPAIGN COUNTY.

CARYSVILLE—POPULATION 180.

REPLIES BY H. B. HUNT, M. D.

Water Supply.

1. From wells, creek and cisterns.
2. None.
3. Mosquito creek. (*b*) Small stream. (*c*) Good. (*d*) Sidney, twelve miles northwest.
4. None.
5. Five hundred gallons.
6. Nine-tenths of all.
7. Dug wells.
8. Thirty feet.
9. None.
10. Clay, hard-pan.
11. Very limited.
12. Nearly all dry.
13. No.
14. None.
15. Neither.
16. By cementing on the ground and wall with brick.
17. Yes.
18. Of typhoid nature.

Disposal of Sewage.

1. None.

CHAMPAIGN COUNTY—Continued.

CHRISTIANSBURG—Population 450.

REPLIES BY W. J. MEANS, M. D.

Water Supply.

1. From wells.
2. No, and none contemplated.
6. Exclusively.
7. Ordinary wells, walled with stone or tiling.
8. Twenty to thirty feet.
10. Clay sub-soil, gravel or quick sand where water is found.
11. They are usually about sixty to eighty feet from vaults. There has been no evidence of contamination yet.
12. Many wells were dry; where water existed it was pure.
13. There was not. In a few instances I attributed sickness to bad or contaminated water, but these cases were due to local causes such as carelessness, etc.
14. Not used at all for drinking.
15. Yes.
18. Septic fever, typhoid in character, confined to families where carelessness prevailed around wells; waste water would run into them, etc.

MECHANICSBURGH—Population, 2,000.

REPLIES BY JOHN H. CLARK, M. D.

Water Supply.

1. Wells.
2. No; the water works question is sometimes agitated.
6. Well water is generally used for drinking and for culinary purposes.
7. Dug and brick walled, but a few are bored and cased.
8. Vary from fifteen to forty feet.
9. There are no artesian wells flowing here.
10. Clay, sand, and gravel.
11. Privy vaults are well removed, but there is danger in some instances.
12. Very low; some entirely failed.
13. A few cases of typhoid fever; were probably due to this condition.
14. Cistern water is but little used for drinking.
17. Only as above stated; a few cases of typhoid fever.
18. As above.

Disposal of Sewage.

1. We have only surface drainage, the ground rolling.
8. In general use.
9. About three by six feet in size, and six feet in depth.
10. No.
11. No.
12. Used by a few families only.
13. Kitchen garbage and house slops are either fed to pigs, kept in back lots, or hauled out of town. No regulation as to disposition of night soil.

MINGO—Population, 200.

REPLIES BY W. N. UNKEFER, M. D.

Water Supply.

1. Wells, and very good water.
2. No.
6. All in town use it.
7. Drove and dug.
8. Thirty to forty feet.
10. Considerable gravel. We get water in the gravel.
11. They are within one hundred to three hundred feet.
12. Seemed to be in good condition.
13. No.
14. A few use it.
15. No filter.
16. With brick, and then cemented.
17. Not any.

Disposal of Sewage.

1. None.
8. All use them.
9. Four to six feet.
10. No.
11. No.
12. None.
13. Give it to the pigs.

MUTUAL—Population, 200.

REPLIES BY H. S. PRESTON, M. D.

Water Supply.

1. Wells.
2. None.
6. Altogether.
7. Walled wells.
8. From ten to fifty feet.
10. Gravel.
11. In general, none.
12. Dry, in a majority of cases.
13. No.
14. Limited.
15. Yes; filter built in cistern.
16. Above.
17. Not this season.

Disposal of Sewage.

8. In all privies.
9. Four feet deep.
10. No.

Our water is good and pure as a rule.

WOODSTOCK—Population, 400.

REPLIES BY W. J. GREEN, M. D.

Water Supply.

1. From wells.
3. (*c*) Good.
6. Nothing else but well water.
7. Dug and driven.
8. From twelve to seventy feet.
10. Black soil through clay, then sand and gravel water.
11. Very few are liable to such contamination.
12. Some entirely dry.
13. No; but little sickness here the last six months.
14. None.
17. I think I have, and corrected the same some four years ago.
18. Scarlet fever, tonsillitis, and various gastric troubles have disappeared since remedying the water supplies.

Disposal of Sewage.

8. Do not use vaults; privies set on top of ground.
11. There is an ordinance, but no attention paid to it.
13. Privies, etc.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CLARKE COUNTY.

DIALTON—POPULATION 125.

REPLIES BY A. W. MITCHELL, M. D.

Water Supply.

1. Wells for drinking purposes, cisterns for washing.
2. No.
7. Bored or dug, and walled with stone.
8. Twenty to thirty-five feet.
10. Water is usually found in sand or gravel after having passed through a stratum of hard blue clay of a thickness of from two to fifteen feet.
11. To a small extent; one may be occasionally.
12. A few were nearly dry.
13. There was not here; but east of here, on Chapman's creek, diphtheria was prevalent; several springs here, all low.
14. None.
18. I attribute the "Chapman creek" epidemic of diphtheria to impure water.

Disposal of Sewage.

1. None.
8. Most privies here have vaults.
9. Two to six feet deep.
10. None.
11. None.
12. None.
13. Generally fed to hogs. Our place is a country village, (a very neat one); population 125.

ENON—POPULATION 400.

REPLIES BY F. A. DUCKWELL, M. D.

Water Supply.

1. Wells; water first rate.

Disposal of Sewage.

1. None at all; we deal in old-fashioned privies yet.

NEW CARLISLE—POPULATION 1,600.

REPLIES BY H. H. YOUNG, M. D.

Water Supply.

1. From wells.
2. Have none; none contemplated.
6. Generally.
7. Both dug and driven.
8. Eighteen to forty feet.
10. Sandy loam, underlaid with gravel to depth of five to twenty feet.
11. To a great extent, filtering through gravel.
12. Some, not many were low.
13. Rather more typhoid fever than usual; do not think it was traceable to conditions of well water.
14. None, or but very little.
18. There was rather more sickness of the usual nature, rather more of typhoid, not of a grave type, amenable to treatment.

Disposal of Sewage.

1. No sewerage.
8. Generally; or rather holes dug in the ground, walled with boards, brick or stone.
9. Four to six feet, depth four feet.
10. No.
11. Are not.
12. Few, if any.
13. Slops are usually thrown on the ground, garbage and ashes are carted away.

The water, as yet, does not seem to be affected, at least, not to any appreciable degree. There will be danger in the near future, from the many disused privy pits.

NEW MOOREFIELD—POPULATION 144.

REPLIES BY J. M. KILGORE, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Exclusively, for drinking and cooking purposes.
7. Dug wells.
8. From fifteen to twenty feet.
9. None.
10. Soil, yellow clay, and water is found on going through gravel bed; all wells here have a gravel bottom.
11. No wells here nearer than eighty feet from privy vaults.
12. Eleven wells here and two springs, seven of the wells were about dry, the rest remaining good.
13. No.
14. Scarcely any, to my knowledge.
15. No.
16. Brick walls cemented.
17. I have.
18 Typhoid malarial fevers, five or six cases.

Disposal of Sewage.

1. None.
8. Almost exclusively.
9. Four and a half by eight and a half feet.
10. No.
11. No.
13. Feeding to swine.

NORTHAMPTON—POPULATION 200.

REPLIES BY M. STRAWSBURG, M. D.

Water Snpply.

1. From wells alone.
3. (*c*) Lime water.
7. They are dug and walled with stone.
8. From 10 to 30 feet.
9. Clay, and what is called quick sand, which is reached at a depth of from 15 to 30 feet.
11. The privies are all on the surface.
12. Almost dry.
13. We had several cases of fever of a low typhoid nature, with a great tendency to hemorrhage.
17. Yes.
18. Our fevers this fall I attributed to impure water; it was greater than was ever known in this locality.

SPRINGFIELD—POPULATION 38,000.

REPLIES BY WILLIS W. HALL, M. D.

Water Supply.

1. Water works and wells, about equal parts, or two-fifths each, and cisterns one-fifth.
2. Stand-pipe system in use.
3. Lagonda river. (*b*) Very small stream; maximum and minimum not definite; rate of current four miles to nothing, as there are times when no flow can be seen. (*c*) Clear; very hard from lime. (*d*) None above; Dayton, twenty-four miles below.
4. (*a*) Northeast, one mile from center.
5. (*b*) In connection with Lagonda river

CLARKE COUNTY—Continued.

water, a basin or reservoir, one mile farther northeast, which basin is fed by springs from bottom. (*c*) At the original pump-house the river water is filtered by wells twenty yards from river.

5. Engineer says one and a half million gallons.
6. About two fifths of all domestic purposes.
7. Open and driven wells.
8. Twenty feet.
9. About 1,000 feet, properties and extent of flow not exactly known.
10. Limestone, clay and sandy loam and gravel.
11. About like the average town of forty thousand people.
12. Many of them furnished water that was offensive to the smell.
13. None, unless the general prevalence of diphtheria last autumn, and this autumn and winter.
14. One-fifth for domestic purposes.
15. No, not generally filtered.
16. Brick walls and cement.
17. Yes.
18. In two families; typhoid fever and diphtheria.

Disposal of Sewage.

1. About eight miles.
2. Forty.
3. Openings for admission of surface water.
4. Five feet in diameter.
5. Two feet.
6. Into Lagonda river, near center of city.
7. Yes, in dry seasons it is sickening to cross at or below this sewer mouth.
8. Almost universal.
9. Three feet in diameter, twelve feet deep.
10. No.
11. No.
12. None.
13. Night-soil hauled to country and buried; garbage same; slops into sinks.

All the river water taken contains all the *direct* influx of feces and urine from 600 men, one mile above pump-house, at Wanler, Bushnell's & Glessner's shop.

TREMONT—Population 500.

REPLIES BY A. H. NESBITT, M. D.

Water Supply.

1. By drove and dug wells.
2. None in contemplation.
6. Altogether.
7. Mostly drove wells.
8. Fourteen feet.
10. Sandy.
11. The drove wells are free from contamination.
12. They produced a regular flow.
13. None.
17. No.

Disposal of Sewage.

8. Generally in use.
9. From four to ten feet.
10. No.
11. No.
12. None.
13. By dumping in the back yards.

CLERMONT COUNTY.

AMELIA—Population, 500.

REPLIES BY W. B. DOAN, M.D.

Water Supply.

1. Wells and cisterns.
2. None in use; not contemplated.
3. (*c*) The well water is generally limestone water; very hard.
6. One-fourth of the water in use is well water.
7. Walled up with stone.
8. Supposed to be about eighteen feet.
9. Artesian wells are not in use.
10. Clay soil.
11. The wells are generally not in close proximity to privy vaults or cess-pools.
12. Most of the wells of the town went dry, our water supply being very scant.
13. There was not; the town was very healthy; no fever of any consequence.
14. Is in general use.
15. I believe the cistern water is not generally filtered.
16. Of brick and cement.
17. I have.
18. Malaria and typhoid fevers; diphtheria.

Disposal of Sewage.

1. We have no sewers.
8. In general use.
9. Are mostly without vaults.
10. Walled up with stone.
11. Not regulated by ordinance.
12. Generally in use.
13. Used for fertilizing purposes.

BANTAM—Population, 150.

REPLIES BY ERNEST BRAGDON, M.D.

1. From wells and cistern.
2. No water works; none contemplated.
6. About four-fifths of all water used.
7. Mostly wells walled with limestone.
8. About eighteen or twenty feet.
9. From eighty to one hundred feet usually contains some sulphur.
10. The soil is clay, containing a large percentage of calcium.
11. Being carefully located, they are not liable to contamination from above causes.
12. They were almost exhausted, but what water they furnished was good.
13. There was none; there was an unusual amount of typhoid fever here but was always contracted by persons employed in Cincinnati.
14. Hardly used at all for drinking.
15. Seldom filtered at all.
17. Only cases from the city of Cincinnati.

Disposal of Sewage.

8. Use them entirely; one for each family here.
9. Vary much in size.
10. Some are and many are not.
11. It is not.
12. Not much used.
13. Mostly hauled from the town for the purpose of using as fertilizers.

This being a small town, we can obtain

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CLERMONT COUNTY—Continued.

pure water for home use, and would be of interest only so far as comparing the health of those remaining here with those whose occupation called them to the city of Cincinnati.

BATAVIA—POPULATION, 1,600.

REPLIES BY ALLEN W. ASHBURN, M.D.

Water Supply.

1. Wells.
2. No.
6. Almost entirely.
7. Ordinary walled wells.
8. From fifteen to twenty feet.
9. About two hundred and fifty feet, where wells have been bored; flow very scanty.
10. Good soil; town lies in basin, along east fork of Little Miami river.
11. Every opportunity from privies and manure piles, pig styes, etc.
12. Very low, or almost dry.
13. Rather more cases of typhoid than usual.
14. Not very largely.
15. Generally filtered before storing.
16. Brick and cement, with outlying filter of brick, etc.
17. Yes.
18. A very few cases of typhoid fever.

Disposal of Sewage.

1. Three thousand feet.
2. Not to exceed one dozen.
3. Catch basins at short intervals.
4. Twelve-inch and twenty-inch diameter.
5. From three to four inches.
6. Into east fork of the Little Miami river.
7. No.
8. Find one in every back yard.
9. Cannot give average, but range from a surface vault to eight or ten feet.
10. No.
11. Have no board of health.
12. None.
13. Thrown into privies, and strewn over yards.

BETHEL—POPULATION, 800.

REPLIES BY JULIUS D. ABBOTT, M.D.

Water Supply.

1. Wells or cisterns.
2. No.
6. Almost exclusively for cooking and drinking.
7. Dug wells walled with limestone.
8. Twenty to thirty-five feet.
9. I believe there are none in the county. In boring for gas, Blue Lick water is found at a depth of six hundred feet in Ohio River Valley; we are four hundred feet above on hill.
10. Three feet of loam, then yellow clay, then loose lime rocks, then blue clay, then a few feet of quick sand, containing good water; then massive solid lime stone of three to four hundred feet in thickness.
11. Very liable; depending on the proximity.
12. Low; but water seemed wholesome.
13. On the contrary very healthy.
14. Not much; some few families use it.
15. No.
17. Only in county farm houses near stagnant fish ponds not in use.
18. Low malarial or typhoid type and erysipelas; not very frequent; however, we are not bothered with epidemics of these.

Disposal of Sewage.

8. All families use them, but not deep.
9. Three or four feet deep, and about five feet square.
10. No; just dug in the ground with wooden walls to hold the earth from caving.
11. No; but by a mutual understanding the people use lime in vaults often.
13. Kitchen-garbage, slops, etc., are generally fed to the hogs.

We could be better fixed with privies and hog pens, but I have no recommendations, as I suppose they could not be carried out.

FELICITY—POPULATION, 1,200.

REPLIES BY W. H. AIKIN, M. D.

Water Supply.

6. About all the water used is well water.
8. Fifteen to twenty-five feet.
10. Limestone.
12. Dry, mostly.
13. No.
14. Very small amount of it used.
16. Brick and cement.
17. Not in the town.

Disposal of Sewage.

The local Board of Health has taken every precaution to keep privy vaults clean.

GOSHEN—POPULATION, 300.

REPLIES BY A. MORRIS, M. D.

Water Supply.

1. Wells and cisterns.
6. Almost universally.
7. Wells dug, and walled with stone.
8. Twenty-five to forty-five feet.
10. Clay sub-soil.
11. Only to a very limited extent.
12. They were lower than ever known before, but the water remained good.
13. There was not.
14. It was used largely during the winter months.
15. It is not.
16. With brick walls, lined with cement.
17. But few cases here in twenty years.
18. I have seen three cases of typhoid where I believed the water of the well was contaminated from privies on the adjoining lots.

Disposal of Sewage.

Ours is a mineral water village of about three hundred inhabitants, and is usually very healthy.

LOVELAND—POPULATION, 1,000.

REPLIES BY W. A. CARMICHAEL, M. D.

Water Supply.

1. Little Miami River and private cisterns.
2. No: none in contemplation.
3. (*a*) Little Miami River. (*b*) The stream is ordinarily rapid when high; average, two feet of water; width, from two hundred to three hundred feet. (*c*) Pure and clear. (*d*) Above, Morrow; below, Miamisville and Milford.
4. (*a*) Not supplied by reservoir.
6. About one family in ten.

CLERMONT COUNTY—Continued.

7. Walled and driven.
8. Twenty to thirty feet.
9. None.
10. Clay and gravel.
11. I think, as a general thing, they are not liable to contamination.
12. All very low, but water good.
13. No.
14. Nine out of ten families.
15. No.
16. Brick and stone walls, cemented.
17. No.

Disposal of Sewage.

1. The town of Loveland has no covered sewers.
6. The drains discharge into the Little Miami River and Obanyon Creek.
7. No.
8. Universal.
9. Ten feet feet deep, and four by six feet in width.
10. No.
11. No.
12. None.

The only source of pollution claimed is the drainage from two slaughter houses into the Little Miami River.

MILFORD—POPULATION, 1,000.

REPLIES BY R. C. BELT, M. D.

Water Supply.

1. Wells and cisterns.
2. No; one in contemplation.
6. About two-thirds of the inhabitants use well water.
7. Dug wells.
8. From twenty-five to forty feet.
9. None in use.
10. Gravel.
11. Most of them in close proximity to privy vaults and stables.
12. Very low; some entirely dry.
13. Typhoid fever.
14. About one-third use cistern water.
15. Generally filtered before storing.
16. Brick and cement; some with filter in cistern.
17. I have.
18. Typhoid fever; have had some twenty to twenty-five cases.

Disposal of Sewage.

8. General use.
9. Four by five feet, and six to ten feet deep.
10. No.
11. No.
12. Only two families use them.
13. Night soil left in vaults, and new ones dug; kitchen garbage and house slops usually fed to hogs.

NEW PALESTINE—POPULATION 100.

REPLIES BY ALBERT SAYLER, M. D.

Water Supply.

3. (*b*) This place is but little more than a hamlet, and the water is obtained from springs and cisterns.
6. About one-fourth as drinking water.
8. There are a few wells.
10. Clay, gravel and sand.
12. Wells, springs and cisterns were nearly all dry.
14. About seventy-five per cent.
15. Not generally filtered.
16. By cementing on earth surfaces.
17. I have not; constipation sometimes from spring water.

Disposal of Sewage.

8. Almost exclusively.
9. About four to six feet square and from four to six feet deep.
10. They are not.
11. They are not.
12. Possibly one-fourth.
13. Emptied on gardens or manure piles.

NEW RICHMOND—POPULATION 3,000.

REPLIES BY A. C. NORRIS, M. D.

Water Supply.

1. Wells and cisterns.
2. No water works here.
6. About one-third.
7. Common wells.
8. About thirty or forty feet.
9. There is one here, 1,000 feet deep; small flow; blue lick water.
12. Some failed entirely.
13. No.
14. Two-thirds.
15. Some is filtered before and some after.
16. With brick and cement.

Disposal of Sewage.

1. About one mile.
2. None
4. About eighteen inches to two feet.
6. In Ohio River.
7. The one from the woolen mill has, by the coloring matter.
8. The most of the privies are not very deep.
9. Some are not more than five or six feet; some few fifteen feet.
10. No.
11. No.
13. In privy vaults, pig pens and in streets.

NEVILLE—POPULATION 600.

REPLIES BY N. S. HILL, M. D.

Water Supply.

1. Wells and cisterns.
6. About one-fourth.
7. Open wells; one drove well.
8. Fifty to sixty feet.
10. Sandy loam; gravel bed, fed from the Ohio River.
12. Our wells rise and fall with the river.
13. No.
14. Three-fourths.
15. No.
16. Cemented to the ground.
17. No.
18. Health good; malarial fevers usually prevail in the summer and fall; less this year than usual.

Removal of Sewage.

1. None.

OWENSVILLE—POPULATION 500.

REPLIES BY J. S. COMBS, M. D.

Water Supply.

1. Wells.
2. None in use; none contemplated.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CLERMONT COUNTY—Continued.

6. Almost all; some few families use cistern water.
8. Fifteen to thirty feet.
9. No artesian wells here.
10. Soil variable, mostly clay.
11. Generally free from any of these contaminations.
12. Most of the wells had a good supply of water; where the wells were deficient in water the families suffered from fever, (low form.)
13. Fevers; intermittent, remittent, and continued, of different grades of severity, occasionally well developed typhoid.
14. Very few families use cistern water.
17. One family had two cases of sickness last and one this year, I think from surface water in well.
18. The sickness has been confined to a few families, where the water supply was deficient.

Disposal of Sewage

1. One sewer two hundred yards long.
6. Into a small stream.
7. There is no family living on the stream below the town.
8. The contents are usually placed in boxes and removed to field or garden.
11. It is made the duty of the marshal to see that they are kept properly.
12. Generally dry dirt is used to destroy odor and disinfect.
13. On the plowed ground and gardens.

CLINTON COUNTY.

BLANCHESTER—POPULATION 1,200.

REPLIES BY LYMAN WATKINS, M.D.

Water Supply.

1. Wells and cisterns.
2. None in use, none contemplated.
6. Exclusively, almost.
7. Wells dug in the ground.
8. Ten to twenty feet.
9. None ever found; no artesian water in vicinity.
10. Yellow clay, blue clay and limestone.
11. Moderate extent.
12. Mostly dry; water hauled miles in some cases.
13. None.
14. To limited extent.
15. Filtered before.
16. Of brick, cemented on inside, with cross wall of brick for filter.
17. Nothing particular.
18. There were several cases of typhoid during dry season, which might have been due to this cause.

Disposal of Sewage.

1. None.
8. Exclusively.
9. Mostly on top of ground; no vaults at all.
13. Thrown carelessly about or used for manure.

Privies are usually without vaults, the fecal matter accumulates under them, and when they are full either the accummulation or the privy is moved.

MARTINSVILLE—POPULATION 355.

REPLIES BY C. E. VANCE, M. D.

Water Supply.

1. From wells and cisterns.
2. None, and none contemplated.
6. Almost entirely.
7. Ordinary excavated wells and bored wells.
8. Forty to fifty-five feet; some less.
10. Black, rich soil, with clay of a blue tenacious character under.
11. Pretty free, generally.
12. Seemed to withstand the drouth well.
13. No.
14. Some few use it; I do myself.
15. Filtered before storing, generally.
16. Made of brick and lined with cement.
17. In the case of one family.
18. Three cases of typhoid fever in same family, and none in other parts of town; well had not been cleaned for years; water smelled badly.

NEW ANTIOCH—POPULATION 275.

REPLIES BY HENRY WHISLER, M. D.

Water Supply.

1. Wells.
2. No.
6. About all.
7. Dug.
8. Average twenty-one feet.
9. Have none here; there is one at New Vienna, two miles from here.
10. Black sandy loam.
11. Very little.
12. Most of them afforded a scanty supply.
13. No, only had two cases of typhoid fever; but this may or may not be owing to the fact that as soon as the water began to get low I had the people boil all their drinking water.
14. Very little.
15. Not to any degree of certainty.

Disposal of Sewage.

1. None.
8. None.
12. It is thrown on the ground.

OAKLAND—POPULATION 175.

REPLIES BY GEO. B. CRAWFORD, M. D.

Water Supply.

1. From wells that are from eighteen to forty-four feet deep.
2. None.
9. None.
10. We have just finished a township well forty-four feet deep; first, clay two feet; clay and gravel eight feet; blue clay twenty-two feet; then gravel, with quicksand, where we came to water.
11. None.
12. Almost all of our wells were dry.
13. There was no typhoid following.
14. Only one family.
17. Only one family, at a distance from here.

Disposal of Sewage.

1. None.
8. None, only the common country privy, built on the ground.
12. None.
13. Fed to the hogs as slop.

Clinton county is underlaid with limestone

CLINTON COUNTY—Continued.

rom ten to thirty feet; at five hundred feet the Trenton Rock was struck at Wilmington, five miles from here, the County seat, while drilling for gas.

REESVILLE—POPULATION 250.

REPLIES BY J. G. M'CLANAHAN, M. D.

Water Supply.

1. Wells.
3. (*c*) Lime and rain water.
6. Mostly well water.
7. Well dug four feet across, walled with brick.
8. In village, twenty feet; country, fifteen feet.
9. None in this locality.
10. Go through black loam and strike water in sand; in low ground, in loam.
12. Some were dry, others afforded some water.
13. In the country there was some typhoid fever, due to low water in the wells.
14. To some little extent.
15. Before storing.
16. Walled with brick and cemented.
17. Yes.
18. Typhoid fever; seven cases.

Disposal of Sewage.

8. None in use.
11. Village is not incorporated; Board of Health has not seen after them.
12. None.
13. Thrown out at the kitchen doors.

The privies are built on top of the ground. Water from surface contaminates the wells on low ground in the village.

SABINA—POPULATION 1,300.

REPLIES BY S. B. LIGHTNER, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost exclusively.
7. Dug.
8. About twenty feet.
9. None.
10. Limestone.
12. Many were dry; in all water was low.
13. Yes; typhoid fever.
14. Very little.
17. Yes.
18. Typhoid fever; from fifty to seventy-five cases.

Disposal of Sewage.

1. None.
8. Not over five or six in the village.
9. Don't know.
10. Yes.
11. No.
12. None.
13. Night-soil is usually buried; kitchen and house slops are thrown in alleys and back yards.

WESTBORO—POPULATION 350.

REPLIES BY A. F. DENISTON, M. D.

Water Supply.

1. Wells.
2. There is not.
3. (*c*) Limestone.
6. Exclusively.
7. The common wells.
8. Twelve to sixteen feet.
10. Limestone.
11. None.
12. But little water; most of them went dry.
13. Yes; diphtheria and typhoid fever.
14. Limited.
17. Yes.
18. During the low stage of water diphtheria and typhoid fever prevailed to a greater extent than it ever had before in this locality.

Disposal of Sewage.

8. Use the privies without any vaults.
11. No.
12. None.
13. Thrown out on the ground; slops and garbage given to hogs.

COLUMBIANA COUNTY.

CALCUTTA—POPULATION, 125.

REPLIES BY J. CALVIN, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost altogether.
7. The old-fashioned.
8. About forty feet.
9. There is none found.
10. Sandy.
11. Not very near.
12. Very low; almost dry.
13. No disease prevalent.
14. None.
16. Not used.
17. None.

Disposal of Sewage.

8. Not very great.
9. Forty feet.
10. No.
11. No.
12. Not used.
13. Emptied into privies.

EAST LIVERPOOL—POPULATION, 10,000.

REPLIES BY WILLIAM GIBBS, H. O.

Water Supply.

1. By water works.
2. Yes.
3. (*a*) The Ohio River. (*b*) In low water about three miles an hour; in high water, about six miles an hour. (*c*) In low water, clear; in high water, muddy. (*d*) Smith Ferry, four miles above; Wellsville, four miles below.
4. (*a*) Now in city, in east end. (*b*) Reservoirs are used; capacity large; number of gallons not known; constructed of brick and cement. (*c*) None.
5. The amount used is large, but exact amount not known.
6. Very small.
7. Spring wells.
8. Twenty feet.
9. We have none.
10. Gravel slate.
11. Extent is great; therefore, all wells have been abandoned.

NOTE—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

COLUMBIANA COUNTY—Continued.

12. Cannot tell.
13. No.
14. Not any.
17. None.

Disposal of Sewage.

1. About one-half mile.
2. About twenty-five.
3. Trapped.
4. Eight inches.
5. Four and six-inch.
6. Ohio River.
7. None whatever.
8. Generally nothing but privies are in use.
9. From ten to fourteen feet deep; about five feet square.
10. No.
11. By rule of Board of Health.
12. None whatever.
13. Used by farmers and for garden.

KENSINGTON—POPULATION, 107.

REPLIES BY B. C. BATTIN, M. D.

Water Supply,

1. Springs and wells. The wells run from fifteen to ninety feet deep. Principally free stone water.
2. No system of water works; one is in contemplation.
6. Principally.
7. Dug and bored.
8. Is from fifteen to ninety feet deep.
9. No artesian wells.
10. Rock and sand.
11. Care has been taken to keep privies at proper distance from wells; are not affected by them.
12. With two exceptions the water was very low and scarce, and unfit for use until it was boiled; in the deep wells it remained the same as at ordinary times.
13. There was a bilious form of disease, prevalent to a small extent, very similar in form to cholera morbus of summer.
14. Not to any extent.

Disposal of Sewage.

1. No sewers in town.
12. They are in general use.
13. Are emptied on manure piles, and are hauled away by farmers.

Our water supply is kept in good condition except in one or two instances, and means are being used to remedy this.

LEETONIA—POPULATION, 1880, 2,552.

REPLIES BY R. T. MARKS, M.D.

Water Supply.

1. Wells and cisterns.
6. Nine out of ten use wells.
7. The ordinary old-fashioned well.
8. From twelve to twenty feet.
10. It varies; some parts have sandy loam and clay, others have shale rock.
11. One of the greatest dangers of contagious sickness, in my opinion, arises from this source; especially from wells located in sandy loam and clay.
12. A great many of the wells gave out entirely.
13. There was for a brief period a form of fever prevailing, which was a little more than a bilious remittent and not quite a typhoid, but what is known as typho-malarial. This mostly was confined to the region of shallow wells, located in sandy loam and clay.
14. About one in every ten.
15. It is generally filtered in the cistern.
16. Circular in form with partition of brick lined with cement, the side in which the water empties containing charcoal and sand.
17. In my opinion, yes.
18. At different times fever has prevailed, and most always in the same locality, as mentioned above.

Disposal of Sewage.

1. None.
8. A large majority have vaults, while a few use boxes.
9. From four to six feet.
10. No.
11. No.
13. They have no particular method, something like "go as you please" method.

I think the greatest source of pollution of our water supply may be traced to the close proximity of uncemented privy vaults to the wells.

NORTH GEORGETOWN — POPULATION, 225.

REPLIES BY J. M. EARNST, M.D.

Water Supply.

1. From dug wells.
2. No.
6. Entirely.
7. Dug and walled wells.
8. From sixteen to twenty-two feet.
10. Clay, gravel and sand.
11. To a slight extent.
12. About all dry.
13. A few cases of typhoid fever.
14. Not at all.
17. Not that I know of.

Disposal of Sewage.

8. In general use.
9. About three feet square and three feet deep.
10. No.
11. No.
12. Very slight.

WASHINGTONVILLE — POPULATION. 1,400.

REPLIES BY O. A. RHODES, M.D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. Dug.
8. Twelve to twenty-four feet.
10. Blue clay, sand and coal above.
11. Liable from looseness of soil, and carelessness.
12. All low.
13. Sore throats; a little diphtheria.
14. None.
17. Yes.
18. Five cases of diphtheria; two fatal.

Disposal of Sewage.

1. None.
8. Altogether.
9. Five to ten feet.
10. No.
11. No.
12. No.
13. Back yards and street or alley; perhaps, privy vault.

Coverings of wells poor; liable to be contaminated from surface water, rats, toads, etc.

COLUMBIANA COUNTY—Continued.

WELLSVILLE—POPULATION 5,800.

REPLIES BY S. R. BREED, M. D.

Water Supply.

1. Hydrants and wells.
2. Yes, in three-fourths of the city.
3. Ohio river. (*c*) Very riley, and a thick sediment most of the time, and much more after boiling. (*d*) Liverpool four miles above, Toronto fourteen miles below.
4. (*a*) Is about 100 rods above the depot. (*b*) A reservoir, but water is pumped direct through the city, and surplus goes into reservoir; only one pipe from pump to reservoir. (*c*) Not any.
5. Do not know.
6. About one-eighth; many use water from springs from the hill-side.
7. Common dug wells.
8. Ten to twenty-five feet.
10. Clay.
11. Most of the wells are in the low grounds; vaults are higher in many parts of the city.
12. Low or dry.
13. Some typhoid fever, mostly in west part of town.
14. Only a few families.
15. Do not know.
16. Do not know.

Disposal of Sewage.

1. None.
13. Thrown out in alleys or in the privies.

BAKERSVILLE—POPULATION 275.

REPLIES BY E. P. STEWART, M. D.

Water Supply.

1. Wells and Evans' creek.
2. No.
6. Mostly well water.
8. From ten to thirty feet.
9. None here.
10. Sandy on fire clay.
11. Privies, mostly on lower grounds than the wells.
12. No entire failure of supply; some were low, others the supply was good.
13. Not any; general health never better.
14. Little, if any.
17. No.
18. Two or three times within the past seventeen years we have had typhoid fever, owing, as we thought, to imperfect drainage.

Disposal of Sewage.

1. Very little.
8. Privies without vaults.
9. Generally shallow; not walled or cemented.
10. No.
11. No.
13. Usually fed to cattle or hogs, or used as fertilizer, either in town or country.

KEENE—POPULATION 200.

REPLIES BY S. C. LIGHTNER, M. D.

Water Supply.

1. From sunken wells, ranging from thirty to 100 feet.
2. None in use, none contemplated.
6. Almost exclusively.
7. Dug and drilled.
8. From thirty to 100 feet.
10. Yellow clay, some limestone.
11. To a very great extent.
12. Exceedingly bad; water was considerably discolored.
13. Yes, diphtheria and typhoid fever.
14. Very little.
15. Not filtered.
16. Walled and cemented.
17. Yes.
18. Typhoid fever, several cases.

Disposal of Sewage.

1. None.
8. Very great extent
9. From two to five feet.
10. No.
11. No.
13. What is not consumed by beasts is thrown on the surface of the earth.

COSHOCTON COUNTY.

WARSAW—POPULATION 300.

REPLIES BY D. W. MEREDITH, M. D.

Water Supply.

1. One spring, the balance from wells.
2. No, and none contemplated.
6. By two-thirds of population.
7. Mostly driven wells.
8. Twenty-five to thirty-five feet.
9. None here.
10. Sandy loam and gravel.
11. I have not noticed any effects upon the wells from this source.
12. There was abundance of water.
13. This community never enjoyed better health than during the drouth.
14. None.
17. None whatever.

Disposal of Sewage.

8. Exclusively.
9. Two to six feet.
10. No.
12. None.
13. The pig pen and garden, or the privy vault.

CRAWFORD COUNTY.

BUCYRUS—POPULATION 6,000.

REPLIES BY J. B. KREIDER, M. D.

Water Supply.

1. A large well; in addition, the Sandusky River in dry weather.
2. Yes; direct pressure.
3. (*a*) Sandusky River. (*b*) At low water can flow through a foot pipe; in time of floods sufficient to float a ship that ploughs fourteen feet of water. (*c*) The water is clear and fresh when not taken from the river. (*d*) Crestline above, thirteen miles; below, Upper Sandusky, sixteen miles.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CRAWFORD COUNTY—Continued.

4. (*a*) Within the corporate limits of the city is the well; our supply is by direct pressure. (*b*) No reservoir, but a large well, fifteen feet in depth and about twenty-four in diameter. (*c*) The Hyatt system.
5. Three hundred thousand gallons daily.
6. Almost generally.
7. Dug wells.
8. About twenty feet.
9. At about twenty feet; There are only a few in the city flowing; I do not know their chemical properties; never been analyzed.
10. A black loam with a clay subsoil.
11. Extremely liable, both from proximity to these vaults and the shallowness of most wells—many not over fifteen or twenty feet in depth.
12. Some dry, and many nearly so.
13. No, not this year.
14. Only a small number use cistern water.
15. After storing.
16. The water is filtered through brick walls, the outside walls cemented; a few have also top filters.
17. Yes.
18. Last year I saw a few cases of typhoid fever which were directly traceable to impure water from well contiguous to stables.

Disposal of Sewage.

1. From seven to eight miles.
2. Not one-fourth of the residences.
3. Main sewer open at both ends; has a strong draft or current of air running in an opposite direction to the course of water; is also open at the inlets.
4. About four and one-half feet in diameter.
5. About one foot.
6. In the Sandusky River.
7. Not noticeable, as so few privies yet empty into the sewers, and our sewer is also a stream of water; sewer is occasionally flushed.
8. In general use, excepting those who have connected with sewer this year.
9. About three feet; depth about the same.
10. Not cemented.
11. Regulated by ordinance.
12. Only one in the city that I know.
13. Dumped near the river below the city limits, and if not removed by periodical floods, is burned in dry weather.

CRESTLINE—POPULATION 3,300.

REPLIES BY G. R. EDWARDS, M. D.

Water Supply.

1. From a spring east of the town, and private wells.
2. Yes; one of the best in the state.
3. (*b*) We have two artesian wells—one four-inch pipe 111 feet, and one five-inch pipe 126 feet. (*c*) Good and clear; soft, or more so than most of the wells. (*d*) Shelby, nine miles above; Galion, four miles below.
4. (*a*) About three and one-half miles. (*b*) Yes, we have two reservoirs. (*c*) No, there is no process used for filtering.
6. About one-half of the water used.
7. The ordinary kind, those walled up with stone.
8. From ten to fifty feet.
10. As a rule, sand and gravel.
11. A very few are so situated that they become contaminated.
12. A great many of them were dry, or very low.
13. Yes; typhoid fever and typho-malarial fever.
14. Only in a few instances.
15. In only two cases to my knowledge; before.
16. Mostly of pine—tubs.
17. Yes.
18. Last fall, endemic of typho malarial and typhoid fever.

Disposal of Sewage.

1. One-half mile of large sewer and about five miles of small.
3. Large one by trap and grate.
4. Twenty by twenty-four inches.
5. Eight inches.
6. North, into a small stream, a branch of the Sandusky.
7. Yes, very much so, and becomes very offensive.
8. They predominate in this locality.
9. Two by four feet, and six deep.
10. No; simply a hole in the ground.
11. No.
12. Never had one in the town.
13. Throwing it on the open ground.

GALION—POPULATION 6,500.

REPLIES BY JAMES ROBINSON, H. O.

Water Supply.

1. Wells, seventeen feet deep and thirty feet in diameter.
2. Yes, we have water-works.
3. (*c*) Good; majority of our wells furnish hard water.
4. (*b*) Large well owned by company; stand-pipe one hundred and thirty-five feet high. (*c*) No filtering necessary; water is hard, but esteemed good.
5. Approximately 350,000 gallons.
6. Quite generally for household purposes.
7. Dug wells.
8. Varies from nine to thirty-five feet.
9. Have no artesian wells.
10. Both gravel and clay.
11. Can only answer approximately, say one in fifty.
12. Probably one-third of them failed to furnish any water, but there was ample supply by others to accommodate all persons.
13. No; general health good; had no epidemics.
14. Very little.
17. No, not this past season.

Disposal of Sewage.

1. No sewers; one in contemplation.
8. Very general.
9. About three by five in size, and four to five feet deep.
10. No, only now and then one.
11. Yes, as to distance, fifty feet from wells. Board orders them emptied.
12. Very small number, I think.
13. Night-soil mostly hauled onto farm land; slops and garbage, in most instances, buried or burned.

NEW WASHINGTON—POPULATION, 900.

REPLIES BY THOS. F. KELLER, M.D.

Water Supply.

1. Wells and springs.
2. No.
7. Almost exclusively, save a few who use spring and rain water.
8. Varying from ten to sixty feet.
9. I don't know.
10. Yellow and blue clay.
11. Some are in close proximity, while others are not.
12. The majority of the wells were dry during the late drought.
13. No.

CRAWFORD COUNTY—Continued.

14. Ten per cent.
15. Before.
16. Brick and cement.
17. Yes.
18. Where the wells were filled with decayed wood, tin buckets, pans, etc., there was generally a great amount of fever, diarrhœa and dysentery.

Disposal of Sewage.

8. Almost exclusively.
9. Four by six and five to seven feet deep.
10. No.
11. No.
12. None that I know of.
13. Miscellaneously over the lot.

SULPHUR SPRINGS—Population, 435.

REPLIES BY JOHN B. SQUIRE, M.D

Water Supply.

1. Wells, and the sulphur springs.
2. None in use, and none contemplated.
3. (*a*) No water is so taken.
7. Some few tile walled wells; mostly brick and stone walled wells.
8. From thirty to forty feet.
9. Along the southeast border of the village, on the low ground, sulphur water is found thirty-five feet below surface and runs out at top; these wells yield an abundance of water in dry seasons.
10. Loam above, then clay down twelve feet (blue clay), and from one to six feet of gravelly hard pan above the water.
11. Not much danger of contamination; a mile or two east of town the danger would be much greater from sand seams traversing soil.
12. Some wells in the village afforded but little water; all the sulphur wells and many others afforded an abundant supply of water through the drouth. but in adjacent country, wells failed generally.
13. There was not; nor a greater than usual amount of sickness.
14. But little used.
15. Not generally filtered.
17. Not in our village.
18. Some twelve years ago a terrible epidemic of diphtheria prevailed here; Sulphur Springs run was obstructed and filthy; it was cleaned out, and afterward sickness subsided.

Disposal of Sewage.

1. None.
8. Nothing else is used here.
9. Perhaps three by five feet, and three feet deep, might be an average.
10. Not at all, that I know of.
11. No.
12. I don't know of any.
13. Generally thrown out on the ground.

POPLAR—Population, 200.

REPLIES BY F. W. SCHWAN, M.D.

Water Supply.

1. Wells.
6. All.
7. Ordinary walled wells.
8. Twenty feet.
10. Sandy loam
12. A number of them dry.
13. None.
14. Very little.
17. None.

Disposal of Sewage.

12. Very few.
13. On fields and vicinity.

CUYAHOGA COUNTY.

BRECKSVILLE—Population, 1,400.

REPLIES BY W. A. KNOWLTON, M. D.

Water Supply.

1. Wells, springs, and cisterns.
2. No.
6. Most houses in this and adjoining townships are supplied by wells.
7. Mostly dug wells, with uncemented stone or brick walls.
8. From ten to forty feet.
9 I know of no flowing wells in this vicinity.
10. Mostly clay; here and there gravel.
11. A small percentage are unquestionably polluted.
12. Water low.
13. There were some cases of gastro-intestinal disorders, which were fairly attributable to bad water; some cases of typhoid fever.
14. Perhaps five per cent. of families use it.
15. Generally coarsely filtered before storing.
16. With cemented brick walls, and an outside filter of sand and gravel, or the same with charcoal.
17. Yes.
18. Here and there families affected with typhoid fever; but more frequently diarrhœa, gastric disturbance, and ill-defined and recurrent fever.

Disposal of Sewage.

1. No sewers.
8. No stone or brick vaults.
12. A few families use dry-earth in the privies.
13. Garbage fed to pigs and chickens; night soil goes to privies; slops thrown on the ground around houses, or carried off in drains. In the village and on farms privies are cleaned occasionally, and contents used as fertilizer. Some wells are polluted by soakage from privies, stables, and ground saturated with slops, wash water, bowl droppings, etc.

CLEVELAND—Population, 225,000

REPLIES BY G. C. ASHMUN, M. D., H. O.

Water Supply.

1. Lake Erie is the only source of public supply.
2. Water works, *i. e.*, pumps, reservoirs, and pipes.
3. (*a*) Lake Erie. (*b*) There is a current in Lake Erie at a certain distance from the shore; but in the bays there are "shore eddies," which are unreliable in direction and force. (*c*) Lake Erie water would be rated "hard," from the lime, iron, and alum in it.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

CUYAHOGA COUNTY—Continued.

It has considerable organic matter in it most of the time; very little chlorine or ammonia.

4. (*a*) Water is taken by tunnel from about one and one-eighth miles from shore. (*e*) No process of filtering is in use; but careful chemical tests show that sedimentation in pipes and reservoirs improves the quality very decidedly.
5. About 28,000,000 gallons in winter; 40,000,000 gallons in summer.
6. About one-fortieth of the population.
7. Walled with stone or brick, and driven-pipe wells.
8. From ten to seventy feet.
9. Borings to the depth of 3,000 feet have given no constant flow; hence, there are no artesian wells in use.
10. Clay, underlaid by shale or gravel.
11. Almost certain to be contaminated, from the fact that where wells are still used there are no sewers.
12. Water low, and proportion of organic and inorganic matters increased.
13. On some streets and in some districts typhoid fever prevailed, which it was thought by attending physicians resulted from using the water from wells.
14. Very little.
15. Yes; when used.
16. Brick and water lime.
17. Yes.
18. Space too small. A single instance: This last September (1887) a family of five sick with typhoid fever; had water examined; found it polluted by organic matters; had vault cleaned, when the water in the well fell two feet, with a corresponding inflow into vault.

Disposal of Sewage.

1. About 125 miles.
2. About 9,000.
3. There is no systematic ventilation.
4. Main sewers are from two feet six inches to six feet ten inches.
5. Nine inches.
6. They discharge into Lake Erie either directly or by Cuyahoga River.
7. Yes; at times.
8. Probably about four-fifths of the city.
9. About two and one-half cubic yards; depth seven to eight feet.
10. All vaults built since 1880 are cemented; none before that.
11. Yes.
12. None, or so few as to be inconsiderable.
13. Night soil is removed by contract with Board of Health. No systematic removal of house garbage. Both night soil and garbage deposited in Lake Erie, eight miles from the city.

When the bay of Lake Erie, on which the city is situated, is covered by ice, the water supply is contaminated to some degree by the city's sewage. No contamination is known to reach us from other sources.

COLLINWOOD—Population, 2,000.

REPLIES BY A. L. WALTZ, M. D.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
6. Almost wholly.
7. Ordinary; built of bricks.
8. Ten or twelve feet.
9. Don't know, as there never was one made.
10. Sandy until you get down eight or ten feet, then you strike slate rock.
11. The extent of contamination cannot be stated definitely, but should judge would be great.
12. Very low; many of them entirely dry.
13. No.
14. Scarcely any.
16. Cemented.
17. Not as a rule.

Disposal of Sewage.

1. Have no sewers.
8. Very few in use; simply holes dug in the ground.
11. No; yes as to emptying.
12. No; none used.
13. Every person is compelled to clean out privies twice a year. Some is buried; others used for gardening.

NOTTINGHAM—Population 250.

REPLIES BY W. O. JENKS, M. D.

Water Supply.

1. Wells and cisterns.
2. No, none contemplated.
6. In the majority of cases.
7. Ordinary stoned up wells.
8. Fifteen to thirty-five feet.
9. At about 500 feet; the water is salt; the flow moderate.
10. Sand and shale.
11. In our village the liablity is great.
12. In the shale, the wells were very low; in the sand, the supply was better.
13. In some places typhoid fever could be traced to the polluted water supply.
14. Quite largely in places where well water is hard.
15. Generally; the filter is a brick wall, through which the water percolates, and which is generally imperfect.
16. Out of brick and cement.

Disposal of Sewage.

8. Vaults are uncommon.
10. No.
11. No.
12. Not at all, except one possible exception.
13. Thrown on the garbage heap and drawn away for manure.

Perhaps in no other manner is our water supply polluted more than as indicated in answer 13. Our farmers draw large quantities of manure from Cleveland, which is frequently very foul, and they are careless as to the location of their compost heaps.

ROCKY RIVER—Population 500.

REPLIES BY J. F. HOBSON, M. D.

Water Supply.

1. From wells.
2. No.
6. General.
7. Dug.
8. From five to fifteen feet.
9. None.
10. Gravel, clay and shale, (Erie).
11. Are usually placed a safe distance away.
12. About one-fourth dry; one-half limited to family supply, one-fourth abundance of water.
13. No.
14. Limited.
15. Yes, before.
16. Underground, bricked up and cemented.
17. Not recently.

CUYAHOGA COUNTY—Continued.

Disposal of Sewage.

1. None except tile drainage.
8. General.
9. From one to three feet.
10. No.
11. No.
12. None.
13. Are usually thrown on barn-yard manure pile and then carted out upon the land.

DARKE COUNTY.

ANSONIA—Population 850.

REPLIES BY H. A. SNORF, M. D.

Water Supply.

1. Wells.
2. None in use or contemplated.
6. Almost exclusively.
7. Dug wells and walled with brick or stone.
8. Eight to ten feet.
9. Not known.
10. Low, black surface soil, two feet clay; then the sand at eight or ten feet.
11. Privy vaults are often in close proximity to well, not more than ten feet.
12. Dry as surface of ground, almost; water was scarce
13. Considerable typhoid, in one place in particular.
14. Scarcely any at all, if any.
17. Undoubtedly I have.
18. Last fall all but one in a family of seven had typhoid, several neighbors suffered. This fall the same was observed, only in milder type.
8. Wholly; they are badly constructed and badly cared for.
9. Three to five feet deep, and five by five square.
10. Not at all.
11. No, but there should be.
12. Very few, if any.
13. Deposited in back yards or in alleys.

CASTINE—Population 150.

REPLIES BY O. B. LONGENECKER, M. D.

Water Supply.

1. Well for each family.
7. Ordinary dug wells, usually walled with stone.
8. Ten to fifteen.
9. None.
10. Clay loam, with gravel bed on level with creek where the water comes from.
11. They usually are well removed from pools, and little danger.
12. Pretty low, but most were used.
13. None.
14. None.

FORT JEFFERSON—Population 128.

REPLIES BY DANIEL T. BLACK, M. D.

Water Supply.

1. Wells, for house use and for stock.
2. No, plenty without.
7. Some dug, some drove, and walled with stone; some with sewer pipe.
8. Fifteen to thirty-five feet.
9. Have none.
10. Surface clay a short distance then gravel and sand.
11. Not affected at all by such.
12. Water very low in some, but the majority furnished plenty in our village; low water in the surrounding country.
13. There was considerable typhoid and some typhus fever, in my opinion, due to bad water.
14. None at all.
17. I have, from wells, as stated before.

Disposal of Sewage.

1. None.
8. One for each house; dug three to four feet; not walled.
11. We have only a village, about 125 inhabitants.
13. Fed to pigs in back lots.

GETTYSBURGH—Population, 300.

REPLIES BY C. F. RYAN, M. D.

Water Supply.

1. Altogether from wells.
2. None; not contemplated.
6. Altogether.
7. Ordinary wells; dug in the ground.
8. From fifteen to twenty-five feet.
9. Have none.
10. Principally clay, high and rolling.
11. Not very apt to be contaminated, as our town is small and not very compact.
12. Nearly all were dry.
13. A few cases of typhoid; could not attribute it entirely to the water.
14. Not at all.

Disposal of Sewage.

1. Not any.
8. Not in use; use privies without vaults.
11. No.
13. Usually thrown in the alley.

GORDON—Population, 300.

REPLIES BY JOHN SHUFF, M. D.

Water Supply.

1. From wells.
6. Altogether for cooking and drinking.
7. Dug and walled with stone. A few are bored and lined with stone pipe.
8. From fifteen to twenty-five feet.
9 About 150 feet; composed of sulphur and iron.
10. Top clay, either black or gray; a layer of hard pan below yellow or blue clay.
11. Are generally clear of any contamination, as much so as it is possible in town.
12. Low; a large per cent. went dry.
13. None.
14. None.
17. None.
18. No fevers; was healthy in my locality during the dry weather; some cholera infantum among children.

Disposal of Sewage.

1. None.
8. Generally one on every lot.
9. About two and one-half by four, and four feet deep. Some have no vault at all.
10. No.
11. No.
13. Throw it out in the garden or back yard.

This neighborhood was originally a low and swampy country, with considerable sickness, fevers of different kinds and chills; but the

DARKE COUNTY—Continued.

farmers have done a great deal of draining and tiling; since, the country is a great deal more healthy. It is worth all that it cost them in the way of health.

VERSAILLES—Population, 1,900.

REPLIES BY JOHN E. FACKLER, M. D.

Water Supply.

1. Wells.
2. No.
6. Universally.
7. Dug, and walled with brick; a few bored wells.
8. About twenty feet.
9. Do not know.
10. Gravelly, sandy, and blue clay.
11. No evidence of contamination.
12. Water generally low; some failed entirely.
13. Typhoid fever, the relative number of cases in the surrounding country being equal to, if not greater than, the number in town
14. Not any.
17. Yes.
18. About fifty cases of typhoid fever in this community; fatality, fourteen per cent.

Disposal of Sewage.

1. None.
8. Universally.
9. Four by four feet, and six feet deep.
10. No.
11. No.
12. None.
13. Deposited on manure piles about stables, or hauled away; some feed to pigs.

WEBSTER—Population, 250.

REPLIES BY WM. MINSER, M. D.

Water Supply.

1. From dug and bored wells entirely.
2. No.
6. Altogether.
7. Bored and dug.
8. Twenty to thirty feet.
9. Do not know.
10. Gravel and sand, covered with three to six feet of soil.
11. The contents of the privies might filter through the soil; have very few vaults.
12. Water very low, and much of it could not be used.
13. Yes; typhoid fever, and could trace it to nothing but water supply.
14. Not at all.
17. Yes.
18. Typhoid fever.

Disposal of Sewage.

1. None.
8. Very few; just holes dug in the ground, under the privies.
9. Very shallow.
10. No.
11. No.
12. None at all.
13. Thrown into the back yard.

Our town has about 250 inhabitants; no sewers or drainage; but is underlaid with gravel, and on a hill, and people throw every thing out to be absorbed.

YORKSHIRE—Population 300..

REPLIES BY J. F. ADAMS, M. D.

Water Supply.

1. Wells and cisterns; half the latter not cemented and very dirty.
2. None in use; none contemplated.
6. Quite largely.
7. Wells from nine to twenty-five feet deep.
9. Fifty to seventy-five feet deep.
10. Blue clay.
11. Perhaps half of them in dangerous localities; some of them very well situated.
12. Water low.
13. Bilious fevers, approximating typhoid, and a few cases of typhoid.
14. To perhaps one-third.
15. Seldom filtered.
16. Hole in the ground, walled with brick, sometimes cemented.
17. Very many of them.

Disposal of Sewage.

8. Little holes in the ground two to three feet deep.
10. Not at all.
12. Not at all.
13. Throw it out at the kitchen door.

Barn-yards and back-houses send their drainage into wells; this is true of Allen, Wabash and Patterson townships.

DEFIANCE COUNTY.

DEFIANCE—Population 7,000.

REPLIES BY J. S. HALLER, SEC'Y.

Water Supply.

1. Wells and cisterns.
2. One is contemplated this year.
6. About three-fourths.
7. Dug wells.
8. About 12 feet, although some as deep as 30 and 40 feet.
9. 160 feet, sulphur; 250 feet, sulphur; 600 feet, no mineral. The 160 foot well will flow full size of 2 inch pipe; the 250 flows full size of 6 inch pipe.
10. Clay, underlaid with quicksand.
11. Am of the opinion they are to a considerable extent.
12. Very low and many exhausted.
13. Extremely healthy season.
14. About one-fourth.
15. Think but few are filtered.
16. Some brick and cement; majority are wood.
17. None noticeable.

Disposal of Sewage.

1. About six miles.
2. About one-fourth.
3. Through perforated man-hole covers.
4. Two egg-shape, 20x30 inches; balance average about 12 inches circular.
5. 12 inch connecting with 20x30 inch sewers only.
6. All into the Maumee river, except one into the Auglaize river.
7. None except canal.
8. Very generally.
9. About 4 by 6 feet and 4 by 5 feet deep.
10. They are not.
11. Construction not; emptying, etc., by rule of Board of Health.
12. Very few.
13. Night-soil carted outside city limits in air-tight casks; balance carted on drays.

DEFIANCE COUNTY—Continued.

FARMER—POPULATION 300.

REPLIES BY B. E. MILLS, M. D.

Water Supply.

6. Entirely dependent upon wells for water supply.
7. Dug wells.
8. 12 to 18 feet.
9. 50 to 75 feet; contains iron and sulphur; flow not very strong.
10. Yellow clay, and underneath quicksand.
11. Very liable, from close proximity.
12. Many failed to furnish water for house use.
13. No.
14. Quite a good many in the more rural districts.
15. No.
16. Brick and stone, then cemented.
17. Yes.
18. Only isolated cases of typhoid fever, and very few in number.

Disposal of Sewage.

8. Altogether.
9. 4 by 6 feet and 3 feet in depth.
10. No.
11. No.
12. Only with two families in our village.
13. Thrown on the ground or in privy vaults,

DELAWARE COUNTY.

BERKSHIRE—POPULATION 100.

REPLIES BY F. L. GAGE, M. D.

Water Supply.

1. Wells.
6. It is our general supply.
7. Dug wells, walled with stone.
8. About twenty-five feet.
9. In some localities at a depth of from five to ten feet, water will rise five feet above the ground; iron, not large.
10. Clay, gravel and quick sand.
11. Very little liability.
12. Very low; still very few wells failed.
13. None whatever; only one case of typhoid occurred, and that was mild.
14. By one or two families.
15. Not filtered at all.
17. No.

CONSTANTIA—POPULATION 200.

REPLIES BY A. W. DUMM, M. D.

Water Supply.

1. Well water entirely.
2. No; none contemplated.
7. Dug.
8. Twelve to twenty feet.
10. Generally blue clay and black shale.
11. Very little, if any.
12. A great number of them were very low, hardly enough to supply house use.
13. None in this little village or the immediate vicinity, but out in the country, about three miles, there was a number of cases of typhoid fever; the wells were all very low in the neighborhood.
17. Not positive.

Disposal of Sewage.

1. No system of sewerage.
8. Entirely
9. Very small and shallow.
10. No.
11. No.
12. Very little.
13. Thrown out on the ground.

DELAWARE—POPULATION 9,000.

REPLIES BY JAMES M. CHERRY, M. D., H. O.

Water Supply.

1. Wells.
2. No, but one contemplated.
6. It is in general use.
7. The most of them dug wells, some drove.
8. About twenty feet.
9. Don't know; we have none, except one found in drilling for gas 300 feet.
12. Quite low.
14. Very little used.
17. No.

Disposal of Sewage.

8. In general use.
9. About five feet.
10. All that have been made since last May are cemented.
11. Yes.
12. There are seventy-five or eighty in use.
13. They are taken out of city limits from one to two miles.

GALENA—POPULATION 500.

REPLIES BY H. A. FURNISS, M. D.

Water Supply.

1. Wells and Cisterns.
6. About one-half.
7. Dug and drove.
11. Very limited indeed.
12. Upper part of town quite low, but in lower part not affected much.
13. No.
14. About one-half.
15. Yes, before storing.
16. Walled up with brick and cemented.
17. No.

The depth of wells varies very much here, in the upper part of town they are quite deep, in the lower part, as we approach the river, they are shallower, and the soil varies in the same way; blue clay in the upper part.

POWELL—POPULATION, 300.

REPLIES BY JOHN CAMPBELL, M. D.

Water Supply.

1. From wells.
2. No.
6. Almost exclusively
7. Dug wells, either bricked or stoned up.
8. From sixteen to thirty feet.
9. Don't know.
10. Clay; blue clay sub-soil.
11. To a considerable extent.
12. Very low, most of wells were dry; water was carried some distance.
13 Yes; typhoid fever almost epidemic.
14. There are a few cisterns.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

DELAWARE COUNTY—Continued.

15. No; some very few have filters.
16. Walled with brick and cement, with a brick wall in the center to act as filter.
17. Yes; at least I thought so.
18. The prevalence of typhoid fever at a time when water supply was so low, led me to believe that there was some connection between the two, as it is when the water supply is low that we seem to have excessive amount of typhoid.

Disposal of Sewage.

8. To a considerable extent.
9. Not very deep—two to four feet.
10. No.
11. No.
13. Disposed of in back part of lots; a very few have drains leading to nearest gutter.

SUNBURY—Population 600.

REPLIES BY THOS. J. WILLIAMS, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost universally.
7. Dug wells.
8. From fifteen to twenty-five feet.
9. No such wells; never been any effort to obtain such wells.
10. Yellow clay, blue clay, shale or rock bottom.
11. Very limited extent.
12. About one-third completely dry; one-third very low; one-third affected but little by drouth.
13. About the average of other years.
14. Very limited.
15. No.
16. Brick and cement.
17. Yes.
18. Dysentery and diarrhœa; late fall months; no deaths from those causes, but an increase of sickness over other years.

Disposal of Sewage.

1. No system of sewerage—not more than one mile.
6. In small brook which finds its way into Alum Creek one mile away.
7. Not to my knowledge.
8. Universally.
9 Eighteen inches to three or three and one-half feet.
10. No.
11. Yes.
12. Limited.
13. Burying.

ERIE COUNTY.

BERLIN HEIGHTS—Population 600.

REPLIES BY F. A. ELDRIDGE, M. D.

Water Supply.

1. Dug wells.
2. No.
6. Very generally.
7. Nearly all dug; a very few artesian.
8. Fifteen to thirty feet.
9. Sixty-five to one hundred and fourteen feet.
10. Dug wells, gravel and clay, artesian, below slate rock.
11. Most wells are at a distance from these sources.
12. Dry, and where not dry, water poor.
13. There was.
14. Slightly.
15. No.
16. Of brick or stone, cemented.
17. Yes.
18. A peculiar form of fever, to which "Peppers relapsing fever" answers best.

Disposal of Sewage.

1. None.
8. Very few.
9. Three or four feet.
10. No.
11. No.
12. Not all.
13. Night-soil buried or put onto the land, the others fed to hogs or thrown out in back yard.

The common wells are old, and as they became low they drained the surrounding surface of all impurities at every shower of rain.

HURON—Population 1,100.

REPLIES BY E. J. GOODSELL, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Wholly.
7. Some are stone-walled; the new wells bored and earthen pipe.
8. Thirty feet.
10. Clay.
11. Very close to vaults.
12. Very low, many dry.
13. Typhoid fever.
14. Used wholly by some who have a filter in the cistern.
15. After.
16. About one-half are wood cisterns, and the other half cement and brick.
17. Cannot state positively.
18. Have believed some cases of low fevers and malaria have been caused by low water.

Disposal of Sewage.

8. Few.
9. Four feet.
10. No.
11. No.
12. To considerable extent.
13. Thrown out back to filter back into the wells.

MILAN—Population 1,100.

REPLIES BY W. J. ESCH, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use and none contemplated.
6. Mostly.
8. Ten to eighteen feet.
10. Clay.
11. Not a great deal.
12. Very low in the great majority of cases.
13. Bowel troubles.
14. Somewhat, but not much.
17. None directly.

Disposal of Sewage.

1. None.
8. Entirely.
9. 4 by 4 feet and 4 to 8 feet deep.
10. No.
11. Have no such board, and cannot induce council to appoint one.

ERIE COUNTY—Continued.

12. None.
13. None that I know of except letting it decay in back yards.

VERMILLION—Population 1,300.

REPLIES BY F. C. M'CONNELLY, M. D.

Water Supply.

1. Cisterns.
2. No.
6. Scarcely at all.
7. Those excavated and stoned up with bolders or sandstone.
8. 15 to 35 feet.
9. Not known.
10. Loam surface, underlaid with yellow clay, and that by blue clay, and it by shale (Huron).
11. The same as wells in like soil.
12. Very low, or many of them dry.
13. No, not in Vermillion village. Back from the lake a fever resembling in many respects typhoid was prevalent. Most cases were complicated with stomach or lung difficulties.
14. Entirely when it can be procured. No fever where cistern water was used.
15. In modern cisterns, before; in older cisterns, after.
16. Under-ground, either bricked up or stoned up, cemented with the best cement. Brick filter through the middle; water on one side and taken from the other by chain pump.
17. Quite a number of cases.
18. Where well water is used a mixed fever resembling typhoid, complicated by stomach or lung troubles.

Disposal of Sewage.

1. None.
8. General.
9. 4 by 6 feet; depth 4 to 6 feet.
10. No.
11. I think not.
12. But little, if any.
13. Each family disposes of night-soil and other garbage as is most convenient to them.

The water of cisterns is collected from the roofs of dwelling houses. The conductors are supplied with a cut-off, and the first water is allowed to waste, and when the roof is clean water is turned into the cistern, giving us pure water.

FAIRFIELD COUNTY.

BASIL—Population 500.

REPLIES BY O. P. DRIVER, M. D.

Water Supply.

1. Wells and springs.
2. None in use; none contemplated.
6. Almost exclusively.
7. The ordinary walled well.
8. Thirty feet.
10. Clay.
11. Privies range in distance from wells from 300 to 50 feet.
12. Almost all were dry.
13. No.
14. Very limited.
17. To some slight extent.

Disposal of Sewage.

1. No sewerage.
8. Extensively.
9. 4 feet by 5; 4 feet deep.
10. No.
11. Town not incorporated.
13. Slops fed to hogs; the rest thrown into privy or on ground.

Our town is situated on an elevation, and there is surface drainage in almost every direction.

CLEARPORT—Population, 110.

REPLIES BY W. S. RUTTER, M. D.

Water Supply.

1. From wells and springs.
2. No, and none in contemplation.
6. Almost universally.
7. Dug and walled with stone.
8. Twenty feet.
9. No artesian wells here.
10. Clay, gravel, and sand.
11. To a very limited extent.
12. The water supply was very low; in some cases entirely exhausted.
13. Yes; dysentery and diarrhœa, with a typho-malarial type of fever.
14. To a very limited extent.
15. Filtered before storing generally.
16. Under ground, and walled with brick, and cemented.
17. I have.
18. Typhoid fever, typho-malarial fever, cholera infantum, diarrhœa and dysentery prevailed to a greater extent than usual.

Disposal of Sewage.

1. None, as ours is but a small hamlet.
8. Universally.
9. About four by six feet, and six or eight feet deep.
10. No.
11. No.
12. None.
13. Burying, burning, and throwing out upon the ground.

Several wells are located at the foot of a high hill, upon the slope of which is a cemetery, and I presume the wells are somewhat contaminated, as the families using water from them have had an unusual amount of sickness.

LANCASTER, Population, 8,000.

REPLIES BY G. A. HARMON, M. D.

Water Supply.

1. Wells.
2. Yes; springs tapped by going down twelve feet, then building an arch eight hundred feet long, four feet wide, and two feet high.
3. (*c*) Hard.
4. (*a*) West of city, very near, inside. (*b*) Holly system. (*c*) None.
5. Don't know.
6. Chiefly.
7. Dug and driven.
8. Twelve to sixty feet.
9. One hundred and forty feet; hard; very nice and abundant, rising to within ten or twenty feet of surface.
10. Surface soil, loam; deeper, clay, gravel, and quicksand.
11. I think them very liable to contamination from privy vaults.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

FAIRFIELD COUNTY—Continued.

12. No complaint of dry wells.
14. None.
17. No.

Disposal of Sewage.

1. Six hundred yards.
2. None; only carry off water falling on street.
4. Three feet in diameter.
6. West of city, along Hocking River.
7. No.
8. On every lot.
9. Five to twelve feet deep; four to eight feet in diameter.
10. Not one.
11. No.
12. None.
13. Pitched into privy vaults or out into the garden, back yard, alley, etc.

Our water evidently comes from beneath the city, but is largely protected from privy and sewage contamination by a layer of clay hard pan. Will recommend that we tap the layer of artesian water.

LITHOPOLIS—POPULATION, 500.

REPLIES BY GEORGE E. COURTRIGHT, M. D.

Water Supply.

1. Almost entirely wells; a few families use spring or cistern water.
2. None contemplated.
7. Stone, and walled above the stone.
8. From thirty to forty feet.
10. Stone; free stone in character; water good.
11 No cess-pools; but might be contaminated by privy vaults through seams in rock.
12. Most of them very low, and a few entirely dry.
13. No.
14. Very slight; a few families use it.
16. Made of brick and cement, or cemented on the ground.
17. No.

Disposal of Sewage.

1. None.
8. Entirely.
9. From four to ten feet.
10. No.
11. No.
12. None.
13. Thrown in privy.

Our town is on a side hill, with a layer of good free stone under it, and quarries worked of same. Healthy locality.

RUSHVILLE—POPULATION 425.

REPLIES BY B. A. THOMAS, M. D.

Water Supply.

1. Wells.
2. Tried to have one from spring.
6. Entirely.
7. Dug and walled wells, and three drilled wells.
8. Fifty to sixty-five feet.
10. Clay soil, in some parts a litte sandy.
11. Wells in front part of lot, or near front; privies in rear of lot.
12. Water generally low; some failed entirely.
13. None.
14. Only a few families use cistern water.
15. Before.
16. A small cistern for a filter, filled with charcoal and sand, running by pipe into the large: each walled with brick and cemented.
17. None.

Disposal of Sewage.

8, Generally each house is supplied with one.
9. From three to eight feet; some few have no vaults.
10. None cemented; plank used.
11. No.
12. None.
13. Some emptied into privy vaults and some thrown out on lots or ground.

No cases of typhoid fever in town this year; some years have had a few cases; had malignant diphtheria six years ago, but it was imported.

SUGAR GROVE—POPULATION 400.

REPLIES BY S. RENSHAW, M. D.

Water Supply.

1. Wells.
2. No.
6. For ordinary use entirely.
7. Open and driven.
8. About twenty-four feet.
10. Gravelly.
11. Not to any great extent.
12. Water low, but none became dry.
13. There was less than the usual complaints of any kind of sickness.
14. Not used.
17. No.

Disposal of Sewage.

1. No sewers.
8. In general use.
9. Six feet deep, and three by six.
10. No.
11. Yes.
12. Not at all.
13. Carted to vacant lots outside the village; the noble hog also plays the part of scavenger.

FAYETTE COUNTY.

BLOOMINGBURG—POPULATION, 800.

REPLIES BY JOSEPH M. GILLESPIE, M. D.

Water Supply.

1. Wells.
2. No water works; none contemplated.
6. No others in use.
7. All the wells are walled with brick or stone.
8. Average twenty-five feet.
9. We have never had an artesian well dug in our town, or in the country near.
10. Clay soil; some wells are in a black loam, but we have to pass through hard clay before reaching the water.
11. There are many privies that I know of within thirty or forty feet of the well, and yet the families are healthy.
12. The wells have generally had plenty of water till within a month past, when they nearly all seemed to give out together. While yet the supply was good, we had typhoid fever; quite a number of cases in our town.
13. We had a number of cases of typhoid fever before the wells gave out, but it has entirely subsided since the water supply failed. A few of the wells did not fail and all were supplied from these.
14. A few drink cistern water, and use it for all purposes.
15. We have filters of both kinds, and the water is generally filtered. The cistern water used for drinking is filtered before storing.

FAYETTE COUNTY—Continued.

16. Walled with brick and cemented.
17. I think so.
18. Three cases of typhoid fever in one family, where the well was under the same roof as the stable—a livery stable. Three families drank and used water out of the same well where there was surface drainage toward the well from stable and cow yard; all the families had typhoid fever, and one death in all—more than a dozen cases.

Disposal of Sewage.

1. About two miles.
2. Do not know; quite a number have drained their lots.
3. Through catch-basins.
4. Through ten-inch tile.
5. From four to six inches.
6. In East Fork of Paint Creek.
7. Not any.
8. In general use.
9. Size, eight by eight; depth, average six feet.
10. Not cemented.
11. No such regulations.
12. Just beginning to come in use; not many yet in use.
13. Just thrown out; some few have sinks, a few leading to the main sewers.

Our system of drainage was begun in 1877. the fall of that year we had twenty-five or thirty cases of typhoid fever. For five years or such a matter after, we did not have a single case in our town, and less cases since than before.

DELTA—POPULATION, 1,500.

REPLIES BY S. P. BISHOP, M. D.

Water Supply.

1. Surface wells.
2. No.
6. Generally, though a few use filtered rain water.
7. A few are bored eighty to one hundred feet deep; most of them only ten feet.
8. Eight to fifteen feet.
9. Eighty to one hundred feet, with abundant flow to within twelve feet of surface.
10. Sandy on surface, from twelve to sixteen feet, then blue clay bottom in west half of town; east one-half, clay.
11. Many are so situated as to be easily contaminated by privy vaults and surface garbage washings
12. Many of them dry.
13. Not as much so as in some previous dry seasons.
14. About one family in fifty use it.
15 After, though I filter both before and after.
16. Mostly of wood; pine tanks set in the ground ten deep feet.
17. Yes, on several occasions.
18. More of typhoid fever, and some few epidemics of dysentery.

Disposal of Sewage.

1. None.
8. Very generally.
9. From three to six feet, by two to six feet deep.
10. No.
11. Not to any extent.
12. I know of none except my own.
13. Thrown out on the surface soil or compost pile.

MILLEDGEVILLE—POPULATION 380.

REPLIES BY J. T. MASON, M. D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. Walled wells, brick.
8. Average fourteen feet.
10. Black and loamy.
12. Very low, most of them went dry.
13. Typhoid fever and diphtheria.
14. None.
16. Cemented.
17. Yes.
18. One hundred and sixty cases of diphtheria and forty-eight cases of typhoid.

Disposal of Sewage.

1. One-fourth mile.
2. None.
8. Altogether.
9. Three or four feet.
10. No.
11. No.

The wells are not of a vein stream; generally what we term seep wells.

STAUNTON—POPULATION 100.

REPLIES BY S. H. M'AFEE, M. D.

Water Supply.

1. From wells.
2. None contemplated.
6. The only water used.
7. Of ordinary size.
8. About twenty to twenty-five feet.
9. Have not bored for it.
11. Not liable.
12. Good many dry.
13. None.
14. Not any.
17. No.

Disposal of Sewage.

1. Have none.
8. Generally.
9. From three to five feet.
10. No.
11. No.
12. Have none.
13. Every family disposes of its own.

WASHINGTON C. H.—POPULATION 5,200.

REPLIES BY D. H. HARE, M. D.

Water Supyly.

1. Wells and cisterns.
2. One contemplated.
6. Almost exclusively for drinking and culinary purposes.
7. Ordinary brick walled wells.
8. Fifteen to thirty feet.
9. About 180 feet; sulphur, iron, lime and magnesia.
10. Gravel and sand covered by alluvium.
11. Considerable.
12. Many dry, and nearly all others very low.
13. Yes, of malarial and typhoid fevers.
14. Very little.
15. After storing.
16. Shallow brick, walled and cemented, with a filtering wall inside.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

FAYETTE COUNTY—Continued.

17. Yes.
18. Typhoid and malarial fevers, and bowel and dysenteric troubles.

Dispospal of Sewage.

1. Less than four miles.
2. Unknown.
3. By traps.
4. Two and one-half feet.
5. Fifteen to twenty inches.
6. Into Paint creek.
7. No.
8. Generally.
9. Five by five, five to ten feet deep.
10. No.
11. No.
12. Very little.
13. By dumping onto farms.

A system of water works is contemplated, and I am urging the adoption of the Wagner Steam Wells, as the best possible source of pure water supply.

FRANKLIN COUNTY.

CANAL WINCHESTER—POPULATION, 1,100.

REPLIES BY L. W. BEERY, M.D.

Water Supply.

1. Wells.
2. No; none is contemplated.
6. Well and cistern used wholly.
7. Principally drove wells.
8. Fifteen to thirty feet.
10. Black loam and blue clay.
11. To very limited extent.
12. Good; none failed.
13. No.
14. None.
16. Walled with brick and cemented.
17. No.

Disposal of Sewage.

1. Two miles.
2. Ten or twelve directly.
4. Sixteen inches.
5. Ten inches.
6. Into Walnut Creek.
7. No.
8. Full extent.
9. Two and one-half by four feet and five feet deep.
10. No; they are lined with lumber.
11. Yes; to some extent.
12. None.
13. On surface and through sewers.

CENTRAL COLLEGE—POPULATION, 100.

REPLIES BY A. L. M'LEOD, M.D.

Water Supply.

1. Wells.
10. Clay soil.
12. Most gave out.
13. No.
17. No.

COLUMBUS—POPULATION, 92,000.

REPLIES BY F. GUNSAULUS, M.D., H. O.

Water Supply.

1. Ground water from water-bearing gravel.
2. Direct pumping system in use.
3. (*a*) Scioto, occasionally. (*b*) Minimum flow 5,000,000 gallons in twenty-four hours (about); maximum unknown. (*c*) Good; river water riley about three months of the year.
4. (*a*) One mile above. (*b*) None. (*c*) Principal supply from water bearing gravel, conveyed in brick conduit.
5. Six million gallons.
6. Estimated at seventy per cent.
7. From dug and drove.
11. From the manner in which vaults were allowed formerly to be constructed, great danger existed.

Disposal of Sewage.

1. Sixty miles.
2. No record.
3. Perforated man-hole covers.
4. Seven feet.
5. Twelve inches.
6. River.
7. Yes.
8. Seventy per cent. estimated.
9. Eight feet.
10. New ones are now required to be cemented; old ones not.
11. Both.
12. Very few.
13. Buried outside of city limits.

GROVE CITY—POPULATION, 250.

REPLIES BY WM. HOOVER, M.D.

Water Supply.

6. Entire supply is well water.
7. A few drove wells, others open or dug wells.
8. From fifteen to thirty feet.
10. Chiefly yellow clay.
11. Wells and privy vaults are located with but little reference to contaminating influence.
12. Many wells were dry; others furnished but little water, while a few furnished an abundance of water.
13. Diseases arising from malarial influences were somewhat more prevalent than usual, generally ascribed to the condition of the water.
17. Yes.
18. Chiefly remittent fever; some intermittent, and a few cases of typho-malarial fever. In all about thirty cases during the fall season.

Disposal of Sewage.

1. None.
8. Not more than one-third of the privies are constructed with vaults.
9. From four to six feet in depth; three by four usually.
10. Yes.
11. No.
12. Two-thirds are of that kind.
13. Usually disposed of in an indiscriminate manner.

There are two slaughter-houses within the corporate limits, the refuse of which is disposed of indiscriminately.

NEW ALBANY—POPULATION, 300.

REPLIES BY S. W. RANNEY, M. D.

Water Supply.

1. Wells.
2. No; none contemplated.
6. Altogether.
7. Dug wells.

FRANKLIN COUNTY—Continued.

8. Twenty-two to twenty-five feet.
9. None here.
10. Clay; water found in stone quarry.
11. As a rule, none are close to privy vaults.
12. Very low; some dry.
13. Some bowel trouble.
14. Not any.
17. Yes.
18. Flux, when wells are low. If filth and cess-pools are allowed about the wells, typhoid fever follows.

Disposal of Sewage.

1. We have no sewerage.
8. Generally throughout the village.
9. Three to six feet, and from three to six feet in depth.
10. No.
11. No.
12. Not any.
13. Thrown on the compost heap or manure pile, and taken to the farm or garden.

Our soil is not porous, being clay; hence, wells are not easily affected.

REYNOLDSBURG—Population, 400.

REPLIES BY JAMES B. DYSART, M. D.

Water Supply.

1. Wells for drinking and culinary purposes.
2. None; not in contemplation.
6. Altogether.
7. Common walled wells,
8. Will average about twenty or twenty-five feet.
9. None ever searched for to my knowledge.
10. Part of them are in loamy, gravelly soil along the creek, and part of them in clay in the higher part of village.
11. I think many of them are liable to a considerable extent.
12. Nearly or quite three-fourths of them were dry, or nearly so.
13. There were seven or eight cases of typhoid, typho-malarial, and malarial fevers, mostly in the neighborhood of Black Lick Creek. The case furthest away from the creek being scarcely over two hundred yards.
14. Very little.
17. Not unless the fever cases mentioned were due to that cause.
18. There have been more or less of the above fevers nearly every fall, and all near the creek.

Disposal of Sewage.

1. Not a foot.
8. Not to any considerable extent; probably a half-dozen in the village.
9. Probably about four by four, or sixty to seventy cubic feet capacity.
10. No.
11. No.
12. I do not know of any.
13. Thrown out on the ground, in vacant lots, alleys, gutters, etc., but mostly into a small run passing through the village, and emptying into Black Lick Creek.

There is a public well about fifty yards from the run aforesaid, with a cobbled gutter running about four feet from the mouth of it, which may be a source of infection.

SHADEVILLE—Population, 200.

REPLIES BY W. H. BLAKE, M. D.

Water Supply.

1. Wells.
2. None.
6. Well water is used altogether in our village.
7. Some drove and some dug wells.
8. Twenty to twenty-four feet.
10. Black soil, and underneath it is gravel.
11. Not much liable.
12. Good many of them failed.
13. Yes; more than the usual number of cases of typhoid fever.
14. None used here.
17. Not attributable directly to impure water.

Disposal of Sewage.

8. Universally used here.
9. Six by seven feet, and from two to six feet deep.
10. No.
11. No.

WORTHINGTON—Population, 600.

REPLIES BY J. B. HURST, M. D.

Water Supply.

1. Wells.
2. None in use or contemplation.
7. Dug wells.
8. Twelve to twenty-five feet.
10. Water generally found in slate or sand.
12. Some dry; some very low; others not affected.
13. Not perceptible.
14, None used.
17. No,

Disposal of Sewage.

8. General.
9. Shallow.
10. No.
11. No.
12. None that I know of.
13. No regular system.

FULTON COUNTY.

FAYETTE—Population, 1,000.

REPLIES BY C. B. HERRICK, M.D.

Water Supply.

1. Private wells.
2. No.
6. Almost entirely.
7. Mostly walled up with brick.
8. About fourteen feet.
9. Fountain wells are obtained from fifty to one hundred feet; size varies from a pencil to two-inch hole.
10. Dark loam.
11. No complaints in that direction.
12. Few of them failed.
13. Was not.
14. None.
17. Have not.
18. We have a very healthy location here a few miles out malarial troubles prevail.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

FULTON COUNTY—Continued.

Disposal of Sewage.

Our sewers are simply tile drains, mostly constructed individually and empty in a small stream running through the town. No privy connection; night-soil, garbage, etc., are thrown on the surface of the sandy soil for absorption. Good sized lots for residences give good garden supplies of fruits and vegetables, and affords great facilities for absorption of decomposing garbage, rendering it a fertilizer—none being permitted to remain to become offensive.

SWANTON—Population, 600.

REPLIES BY L. A. BASSETT, M.D.

Water Supply.

1. Wells.
2. None.
6. Altogether.
7. Usually with brick walls.
8. From ten to fourteen feet.
9. From fifty to sixty feet; slightly sulphur; the flow is small, about one-half inch.
10. Sand.
11. The same as in other small towns without sewerage.
12. The shallow ones gave out, but there was an abundant supply from deeper ones.
13. There was not.
14. None.
17. Seldom.

Disposal of Sewage.

1. None; we have only common tile drains.
8. None.
12. None.

The main difficulty in that direction is proximity of privies, and neglect of caring for same.

METAMORA—Population, 300.

REPLIES BY S. M. CLARKE, M.D.

Water Supply.

1. Wells; both dug and drilled.
2. None in use, and none contemplated.
6. The entire use of the village.
7. Mostly dug.
8. From twelve to twenty-five feet.
9. At seventy to one hundred and twenty-five feet.
10. Clay.
11. They are generally not less than fifty feet from privy vaults, except in the small business part of the town.
12. Very low; many dry.
13. No.
14. None.
17. Yes; last spring.
18. Typho-malarial fever; a large number of cases in this village, some of them from foul wells.

Disposal of Sewage.

1. None.
8. Universal.
9. Four by six feet.
10. No.
11. No.
12. None.
13. Night-soil into privy vaults; kitchen garbage, etc., fed to swine.

A few wells back of stores are polluted by surface drainage from stables; the cases of fever in the winter and spring were mostly people who used water from these wells.

LYONS—Population, 219.

REPLIES BY H. H. BROWN, M.D.

Water Supply.

1. Wells.
2. No; neither is there one contemplated.
6. Wholly.
7. Dug wells.
8. Twelve to twenty feet.
9. From fifty to two hundred feet.
10. The soil is a dark clay, from this to muck.
12. The condition was bad; wells mostly dry, or at least so nearly so, that one pailful would empty almost any well in this vicinity.
13. There was a great deal of bowel difficulties of different kinds, and some typhoid fever.
14. Very little.
17. I think I have, repeatedly.
18. During the past fall and early part of winter, I think one-fourth of the sickness originated from impure water.

Disposal of Sewage.

1. None.
8. Almost entirely.
9. Four by four and upwards, and from two to six feet deep.
10. No.
11. No.
12. Not at all.
13. Throw them in the back yard.

GALLIA COUNTY.

GALLIPOLIS—Population 5,000.

REPLIES BY E. WESTLAKE, M. D., H. O.

Water Supply.

1. Cisterns generally; when they give out we go to the Ohio River.
2. None in use.
3. (*a*) Ohio. (*b*) About three miles to the hour. (*c*) Soft. (*d*) Point Pleasant, four miles above Chambersburg, ten miles below; only villages.
7. Walled wells, when used; not much used for drinking or culinary purposes.
8. About 65 feet.
10. Sandy, gravelly soil.
11. Not to any great extent.
12. There was no scarcity of water.
13. Was not.
14. Used to a great extent.
15. Before storing.
16. Arched with brick and cemented on the ground; sometimes walled but very seldom.
17. None whatever.

Disposal of Sewage.

1. No sewerage; all surface drainage; about six miles of gutters.
6. Into river.
7. It has not.
8. Used altogether.
9. Lawful depth—12 feet; 16 feet in circumference.
10. Generally walled with brick.
11. By both.
13. Privy vaults and garden lots; some garbage and slops find their way into the gutters.

GALLIA COUNTY—Continued.

THURMAN—POPULATION 350.

REPLIES BY J. S. THOMAS, P. M.

Water Supply.

1. We have no water-works; all are wells.
6. Altogether.
7. Dug wells with pumps.
8. 20 to 25 feet.
9. None.
10. Loam until we get to quicksand, where the water is.
11. None at all.
12. No difference, dry or wet.
13. No.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. One to each family on a branch.
9. Majority over the rivulet, or about four feet.
10. No.
11. No.
13. Hogs run at large and eat up what garbage we have.

GEAUGA COUNTY.

AUBURN—POPULATION, 800.

REPLIES BY GEO. H. THOMAS, M. D.

Water Supply.

1. Several large springs supply our surface water. Bridge Creek flows through the town.
2. No.
6. Chief supply.
7. Drilled wells.
8. Fifty-five feet.
9. Twenty-four feet, but are not durable, falling in a dry time. Most of the water is hard.
10. Clay loam.
11. These surface wells are more or less liable to the wash from privy vaults.
12. Most all the shallow wells failed, but the drilled ones supplied an abundance of water.
13. No.
14. Not at all; for washing only.
17. No.
18. Been very healthy for five years; at the present time there is some pneumonia and measles prevailing.

Disposal of Sewage.

1. Our town is situated on a hill, and all drainage flows into Bridge Creek.
7. No.
8. Most all privies have vaults.
9. About three by six and four feet deep.
10. No.
11. No.
12. Not in use.
13. Usually drained into the garden; the lots contain about one acre of ground.

This is a small village of about one hundred and fifty inhabitants, on high ground, and the surroundings are generally considered healthy.

BURTON—POPULATION, 1,500.

REPLIES BY H. W. QUIRK, M. D.

Water Supply.

1. Wells; a few cisterns.
6. Nearly exclusively.
7. Drilled and dug in rock.
8. Twenty to thirty feet.
9. None.
10. Sandy loam.
11. Some, not far removed.
12. Very low—the lowest for several years.
13. I think we had a great number of cases of jaundice and other liver troubles due to this cause.
14. To slight extent.
15. Generally before.
16. Tanks, and dug and bricked up.
17. A few.
18. As above.

Disposal of Sewage.

8. Very largely.
9. Very shallow.
10. No.
11. No.
12. None.
13. Dumped in heaps in the open air.

CHARDON—POPULATION, 1,500.

REPLIES BY T. H. SWEENEY, M. D.

Water Supply.

1. Springs, which run from four sides of the eminence on which the town is located; drilled wells and cisterns; also, wells dug in some places.
2. None, but nature's springs are abundant.
6. Exclusively for cooking and drinking except when spring water is used.
7. The majority are drilled in sand rock.
8. From forty to eighty feet.
9. There is but one in this county; that is a mile west of city limits, 140 feet deep; fills a three inch pipe, and is highly magnetic in its properties.
10. Loam, clay and gravely.
11. The liability is slight, if possible.
12. The effect is nearly inperceptible on wells and springs.
13. None at all.
14. Not at all.
17. Have not.

Disposal of Sewage.

1. No sewers except covered tiling from cellars and kitchens, which finds ready access to paved gutters, thence to small streams near by.
8. Not in use; the Board of Health compels the use of disinfectants and cleaning by removal of excrement.
11. By both, except the construction of the privies
13. Goes into compost heaps I believe.

There is no pollution to water supply to my knowledge. The town contains but about two thousand inhabitants, and there are few that are not neat in person and surroundings.

EAST CLARIDON—POPULATION 500.

REPLIES BY F. S. CLAPP, M. D.

Water Supply.

1. From wells and springs.
6. Altogether.
7. Drilled and dug.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

GEAUGA COUNTY—Continued.

8. From 20 to 50 feet.
9. I know of none in town.
10. Sand and clay over sandstone rock.
11. A limited extent; know of none that would be so considered.
12. Very low indeed.
13. So far from it that it was unusually healthy.
14. Scarcely at all.
17. Yes.
18. In one family, of which all the members had malarial fever, the sickness was attributed to a spot where water had stood formerly; in fact, a frog pond.

Disposal of Sewage.

11. No.
13. Altogether by out-houses; house slops, etc., are carried away or fed to swine.

Think this township is quite free from diseases that could be attributed to a polluted water supply.

HAMPDEN—Population 250.

REPLIES OF L. D. WEST, M. D.

Water Supply.

1. Wells.
2. No; not contemplated.
6. Exclusively.
7. Ordinary stoned up.
8. From 16 to 60 feet.
9. None in this vicinity.
10. Clay, underlaid with rock.
12. Mostly dry.
13. No.
14. None, to my knowledge.
17. No.

Disposal of Sewage.

12. Almost wholly.
13. On the surface, promiscuously.

MIDDLEFIELD—Population, 850.

REPLIES BY A. S. SANFORD, M. D.

Water Supply.

1. From wells and springs.
2. There is none, nor any contemplated.
6. Well water is in general use.
7. Some are dug, and others are drilled, and tubing used.
8. From twenty to eighty feet.
10. Clay loam above the rock.
11. To a slight extent.
12. A few of them failed.
13. There did not seem to be.
14. To a very limited extent.
17. I have in some instances.
18. It causes typhoid and malarial fevers.

Disposal of Sewage.

1. There is none.
8. Privy vaults are not extensively used.
10. Some is not.
11. They are not under any regulation or ordinance.
13. The night soil is generally cast into the privies.

The diseases most prevalent this winter are diphtheria, pneumonia, and lung fever.

GREENE COUNTY.

ALPHA—Population, 300.

REPLIES BY J. A. M'CLURE, M. D.

Water Supply.

1. From wells.
6. Entirely.
7. Principally walled wells; a few drove wells.
8. About twenty-five feet.
10. Sandy.
11. Not liable to contamination.
12. Some became entirely dry; others very low.
13. No.
14. In only one or two instances.
15. Before storing.
16. Cemented brick wall.
17. In one family using this cistern water.
18. A case of cerebral meningitis, a case of continued fever, a case of threatened cerebro spinal meningitis, with some enteritis, and minor troubles with younger children.

The water in the cistern of the afflicted family became exhausted, and the first rain was allowed to run in; cistern was cleaned thoroughly, and filter (charcoal) renewed two years ago.

BELL BROOK—Population, 500.

REPLIES BY JOHN TURNBULL, M. D.

Water Supply.

1. Wells.
2. None.
6. It is used altogether.
7. Dug and walled with limestone.
8. From thirty to sixty feet.
9. Not known; none dug at this place.
10. Gravel, sand and limestone.
11. Not any; the wells are well located.
12. A number of the shallow ones went dry.
13. None at all.
14. But very little used for drinking.
17. None at all.

Disposal of Sewage.

8. In general use.
9. About four feet wide by six feet deep.
10. Not at all.
11. No regulation except by property-owners.
12. None at all.
13. Eaten by hogs and chickens; night soil covered up with fresh earth.

Our water is good but strongly impregnated with lime.

CEDARVILLE—Population, 1,400.

REPLIES BY J. O. STEWART, M. D.

Water Supply.

1. Wells, cisterns; hard or limestone water and soft water.
2. None; none contemplated.
6. Almost exclusively.
7. Drilled wells in limestone, and dug wells.
8. From fifteen to seventy-five feet.
10. Gravel and clay: underneath these comes the Niagara limestone.
11. But very little, so far as I know, with exception of during high water; and surface water sometimes contaminates them when not properly built.
12. A great many of the dug wells gave out;

GREENE COUNTY—Continued.

the drilled wells also, except the deep drilled ones.

13. Not in the village, but north and west of town there was somewhat of an endemic of typhoid fever.
14. But very little, yet the cistern is growing in popularity when filtered.
15. Generally filtered before storing.
16. Cemented throughout; a double brick wall divides the cistern into two apartments; charcoal is placed between the two thicknesses of brick.
17. Yes; I believe I had four cases of typhoid fever due to using impure spring water this fall.
18. Two of these were severe cases and two were mild, on account of using boiled water. One of these severe cases occurred in the puerperal state.

Disposal of Sewage.

1. None.
8. Universally.
9. From two to ten feet.
10. No.
11. No.
13. Very little.
13. The usual country way.

YELLOW SPRINGS—Population 1,800.

REPLIES BY WM. M. HAFFNER, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use; none contemplated.
7. Drilled and dug wells.
8. From fifteen to one hundred feet.
10. The dug wells are in blue clay.
11. They are one hundred feet or more from vaults, etc.
12. Many went dry.
13. No.
14. In the ratio of about one cistern to twenty wells.
15. Yes; after storing.
16. Built of brick and cemented on inside.
17. Very few.
18. Few cases of typhoid fever, due to drinking the water of one or two wells known from their location to be contaminated.

Disposal of Sewage.

1. None.
8. Wholly in use.
9. Five by three and four feet deep.
10. No.
11. No.
12. Not used.
13. Throwing on the ground or covering up the vault holes after house has been moved to another location.

Several wells are drilled on the street corners too near the gutters, from which, in wet weather, the filthy water seeps into them.

GUERNSEY COUNTY.

ANTRIM—Population, 300.

REPLIES BY B. F. COEN, M. D.

Water Supply.

1. Wells and springs.
2. No.
6. Almost entirely.
7. Dug wells.
8. Thirty feet.
10. Slate and soapstone.
11. Very little, if any.
12. Very low; several of them dry.
13. No.
14. Not any.
17. Not during the last dry time.

Disposal of Sewage.

1. Not any.
8. None here.
13. Garbage, etc., generally used for swill for hogs.

Two or three wells in town may be slightly polluted by soakings from stables, but there has, so far, been no sickness caused by it.

BROWN—Population, 100.

REPLIES BY T. J. LYNE, M. D.

Water Supply.

1. Wells.
2. No.
6. For all culinary and drinking purposes.
7. The same kind that were constructed in the time of Abraham.
8. Twenty feet.
9. Has not been found.
10. Clay.
11. To no great extent.
12. Plenty of water in most of them.
13. No.
14. Not any.
17. No.

BYESVILLE—Population, 900.

REPLIES BY J. W. RINGER, M. D.

Water Supply.

1. Wells.
2. No system of water-works in use; none contemplated.
6. Is all the water that is used.
7. Dug and walled with stone.
8. From 12 to 20 feet.
10. Clay, low and damp.
11. To a very great extent.
12. The most of them entirely dry; the remainder quite low.
13. Yes, typhoid and typho-malarial fever.
14. None.
17. Yes.
18. Typhoid; one-half more than usual.

Disposal of Sewage.

1. About three-fourths.
2. Perhaps 20 to 30.
3. They are principally open drains.
4. Four feet by eight.
5. About 18 inches by 12.
6. Into Will's Creek.
7. Not much.
8. About one-half.
9. About 3½ to 4 feet.
10. No.
11. Yes.
12. One-third.
13. By sewerage.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

GUERNSEY COUNTY—Continued.

KIMBOLTON—POPULATON, 400.

REPLIES BY D. L. CLARK, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost exclusively.
7. Open wells with windlass.
8. 25 to 35 feet.
9. Unknown.
10. Sandy.
11. Very little.
12. Very low, but few failed entirely.
13. No.
14. None at all.
17. No.

Disposal of Sewage.

1. None.
8. Universally.
9. Three or four feet square.
10. No.
11. No.
12. None.
13. Fed to pigs in stys.

SENECAVILLE—POPULATION, 750.

REPLIES BY A. R. CAIN, M.D.

Water Supply.

1. Wells and cisterns.

6. By nearly all inhabitants; a few families using cistern and spring water in the winter.

7. Dug wells.

8. Thirty-five to forty feet.

10. Clay.

11. The town lies on top of ridge that is just wide enough for street and houses; the privies are all on back of lot that is lower by several feet, and are usually fifty to sixty feet distant from wells.

12. With exception of one or two, the supply has been good.

13. No.

14. Only two or three families.

15. Filtered by a brick partition in cisterns.

16. Of brick and cement.

17. Never knew a case of sickness in town attributable to impure water.

18. In twelve years of practice of medicine in town, we have been free from epidemics, except measles once, and whooping cough once; there is very little sickness in this community.

WASHINGTON—POPULATION, 800.

REPLIES BY R. H. HENRY, M.D.

Water Supply.

1. Wells and springs.

7. Ordinary dug wells.

8. Twenty-five feet.

10. Generally clay, underlaid with gravel and sand stone.

11. To a very limited extent; never have had but one well that could be said to have been poisoned from that source, in which case typhoid fever attacked the family.

12. They were generally well supplied, save in a very few cases on high ground.

13. No; scarcely any sickness in town or vicinity of an acute nature.

14. None.

17. None within the past year.

Disposal of Sewage.

1. About one mile.

2. None direct; the town is situated in the hills and has good natural drainage, with a small natural water-way which is converted into a sewer through the town.

3. Open generally, save where in immediate connection with houses or where they pass under streets and yards.

4. About three to four feet square, built of stone.

5. About one and one-half feet, built of stone and plank.

6. Into a small natural stream upon which or in which the main sewer is situated through the town.

7. No.

8. Used entirely, save one or two that are placed over main or branch sewer passing through yards or lots.

9. About six feet.

10. No.

11. No.

12. None.

13. Kitchen garbage, house-slops, etc., are conveyed to the sewer by some small surface drain where the house is not on the sewer.

Our water supply is not polluted from any source, but on the contrary, we have the best water supplied town in eastern Ohio; not a lot in town but has from one to two wells of water and never failing.

HAMILTON COUNTY.

CARTHAGE—POPULATION, 1880, 2,923.

REPLIES BY T. S. POTTER, M.D.

Water Supply.

1. Cisterns and wells.

2. None in use or contemplation.

6. Two-thirds of the families.

7. Driven and open; walled up with stone.

8. Twenty-five to one hundred and ten feet.

10. Sandy.

11. Great; as there is an average of two privies to every lot of 50x150 feet.

12. Part dry, and all more or less diminished in supply.

13. None.

14. One third of the families.

15. Rarely.

16. Of brick and cement.

17. None.

Disposal of Sewage.

1. None.
8. Universal.
9. Ten to twelve feet.
10. No.
11. None to be less than ten feet.
12. None in use to my knowledge.
13. Each one adopts his own method.

CINCINNATI—POPULATION, 25,000.

REPLIES BY B. STANTON, M. D., H. O.

Water Supply.

1. The Ohio River.

3. (*b*) Current at nine feet stage equals two miles per hour. Oscillations of river are from two to seventy-one feet. (*c*) Clear and impure at low and summer stages, and heavily charged and discolored with suspended matters during rainy seasons.

HAMILTON COUNTY—Continued.

4. (*a*) In the center. (*b*) 100,000,000 gallons capacity; open with stone dams. (*c*) No.

5. Thirty-two million gallons.

6. Very limited.

9. *One thousand four hundred feet; sulpho-saline; four and one-half inch wells yield from eight to sixteen thousand gallons per hour. The well at Moerlein's Brewery is 2,408 feet deep, and yields 24.000 gallons per hour.

10. Commencing at surface, loam, yellow, and blue clay, sand and gravel, soapstone or marl, blue limestone, grey limestone, sandstone, limestone, white limestone, sandstone, hard limestone, red sandstone, white sandstone, coarse sandstone, flinty, limestone, red and white marble, flint.

13. Typhoid fever very prevalent since September. In September, 23 deaths; October, 40 deaths; November, 135 deaths; December, 89 deaths.

14. One-third of population.

15. No; Cisterns almost invariably filled from hydrants.

16. Brick, with hydraulic cement lining.

17. I believe the prevalence of typhoid fever due to the condition of the water.

Disposal of Sewage.

1. Eighty-four.

2. Five thousand four hundred.

3. Through man-holes.

4. One fourteen by twelve feet; one twelve feet in diameter, and several three and four feet in diameter.

5. About fifteen inches in diameter.

6. Into the Ohio River.

8. To some extent in all parts of the city; in extensive use in parts not sewered.

9. Seven to thirty feet deep.

10. No.

11. Construction not permitted where sewers are available; emptying regulated by Board of Health.

12. Not used to a great extent.

13. Put on sullage boat, and dumped into the Ohio below the city.

The above information is obtained from Superintendent of Water Works, A. J. More, and the City Engineer, H. J. Stanley.

*The analysis of the Moerlein artesian well (2,408 feet deep) by Prof. Wayne, gave the following results:

Grains in one U. S. gallon—	
Carbonate of lime	19.34
Carbonate of magnesia	9.13
Chloride of sodium	534.77
Chloride of potassium	3.95
Chloride of magnesia	17.26
Chloride of calcium	22.19
Sulphate of lime	29.20
Sulphate of potash	2.30
Iodide of magnesium	.30
Bromide of magnesium	.39
Oxide of iron	.43
Phosphate of soda	1.34
Silica	.79
Loss in analysis	.76
Total	642.16

CLEVES—Population, 1,200.

REPLIES BY W. C. HUGHES, M. D.

Water Supply.

1. Principally open wells and cisterns, though quite a number use Ohio River water.

2. No.

3. (*a*) Ohio River. (*c*) Turbid; full of sediment.

6. Very generally.

7. Nearly all open; some driven wells.

8. Average depth, thirty feet.

10. Clay and limestone; a few are in gravel.

11. To a very great extent, town being nearly one hundred years old.

12. Most of them were dry for several months.

13. I did not note any.

14. There are but few used.

15. Not filtered.

17. Some few (six or eight) of typhoid from Ohio River water.

Disposal of Sewage.

8. Very generally; some two hundred in use.

9. Ten or twelve feet square; fifteen feet deep.

10. No.

11. No.

12. None.

13. Thrown into alleys and back streets.

ELIZABETHTOWN—Population, 200.

REPLIES BY A. J. GARRISON, M. D.

Water Supply.

1. Springs, wells, and cisterns.

2. No.

6. About one-half the population use it.

7. Dug and driven wells.

8. From twelve to sixteen feet.

9. None.

10. Loam, gravel, and sand.

11. The privy vaults are in most all cases about fifty to sixty feet from the wells.

12. Most were dry.

13. No.

14. Not much.

16. Brick and stone, cemented.

Disposal of Sewage.

1. None.

8. All the population use them.

9. From four to six feet.

10. No.

11. No.

12. None.

13. Night soil generally thrown in privy vaults; the rest thrown on the ground outside of the houses.

We have a cemetery which, I think, would cause some trouble during a very wet summer.

GLENDALE—Population 1,600.

REPLIES BY R. D. MUSSEY, M. D.

Water Supply.

1. First wells, then cisterns.

2. No; 2nd yes; experimenting with drove well; first one, not completed.

6. I don't know the proportion.

7. The ordinary plain, every day well. Simply a "hole in the ground."

8. About forty-five feet an average.

9. Will reply to this question later.

10. Limestone.

11. As a general rule, not liable.

12. Nearly all dry; one about sixty-five feet had very little water in it for a time, then was dry for some weeks; could dip water from one well on my place at twenty-four feet, but was below the buckets of pump.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

HAMILTON COUNTY—Continued.

Another on the top of the hill, forty-five feet deep, had plenty of water in it.

13. There was not.
14. I think that among the better class the majority, whilst the reverse holds among the poor.
15. No.
17. Yes.
18. I have now four cases; two railroad men; one a clerk from the city, and one a workman at Ivorydale; the latter is in the habit of drinking freely from the limpid nectar of Mill creek.

Disposal of Sewage.

1. No.
2. No.
8. Universal.
10. No.
11. No.
13. Vaults; 2nd and 3d, dogs, cows, pigs and open gutters, occasionally private cess pools.

I think that our freedom from disease here is due to our topography; drainage is natural.

HARRISON—Population 2,500.

REPLIES BY JOHN B. CHEETHAM, M. D.

Water Supply.

1. Wells.
7. Drove wells.
8. Twenty feet.
10. Gravel.
11. None whatever.
12. All dry.
13. Typhoid fever.
14. Very little.
15. Not filtered.
17. No.

Disposal of Sewage.

1. One-half mile.
2. About two or three.
3. Open.
4. Three feet.
6. White Water river.
7. No.
8. Every man has his own.
9. About ten feet.
10. No.
11. Yes.
12. None.
13. In the river.

HARTWELL—Population 2,000.

REPLIES BY WM. H. BOMKER, M. D.

Water Supply.

1. Wells.
2. No, not to my knowledge.
6. Altogether, for cooking, except where cistern water is used.
7. Mostly drove.
8. From thirty to forty feet.
9. There are none.
10. A portion of the town sandy or gravelly and the other clay.
11. Being driven wells, at the depth mentioned, the water is probably not contaminated.
12. Most of them had water, a few went dry.
13. None whatever, except a little malaria, which is always with us, to a limited extent.
14. About equal with well water.
15. No.
17. No.
18. But little sickness of any kind.

Disposal of Sewage.

1. 1,280 feet of 3 foot brick sewer, and about one-half mile of 8, 10 and 12 inch tile pipe.
2. About fifteen, for *water* only.
4. Three foot brick.
5. Part six inch and part eight inch.
6. In open trench, flowing thence to Mill creek.
7. No.
8. None.
11. We have no sewerage system.

MT. HEALTHY—Population 1,200.

REPLIES BY A. B. LUSE, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use or in contemplation.
6. For culinary and drinking purposes.
7. The wells were dug and walled with stone.
8. Twenty to forty feet.
9. We have none.
10. Yellow clay, blue clay, hard pan and limestone.
11. When the soil is full of water the drainage from privy vaults, cess-pools and other sources of filth, can't help but find its way into the wells.
12. Most of them were dry.
13. There was more diarrhœal trouble than usual throughout the country, as well as in the village, proving fatal with a number of little children.
14. Very little.
17. I have thought so in a number of cases.
18. Typhoid and typho malarial, in particular, and our malarial fevers in general.

Disposal of Sewage.

1. Not one inch, except cellar drains; they are generally bad.
8. Every family in town is supplied with a privy, nine-tenths of them on top of *terra firma*, and I don't know of one in the town that is worthy of the name vault; where there is one it is lined with old wornout inch boards.
11. Every family is its own board of health, and pass their own ordinances.
12. Don't know of any.
13. Thrown in the privy; garbage, slops, etc. are thrown in back yard, alley or street; dead chickens and cats usually find the alleys.

The population of Mt. Healthy is 1,200 to 1,300, and I do not believe that you could persuade them to incorporate their village and improve their streets and alleys; they say our taxes would be double what they are.

PLEASANT RIDGE—Population 600.

REPLIES BY JOHN J. MARION, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use, none contemplated.
6. Almost entirely for culinary purposes.
7. Excavated and walled.
8. Do not know.
10. Clay, with limestone.
11. Badly exposed.
12. Very low; some entirely empty.
13. I think not.
14. Do not know; imagine very little.
15. No.
17. Only where Cincinnati water was used.
18. Typhoid fever to an unusual degree.

HAMILTON COUNTY—Continued.

Disposal of Sewage.

1. None.
8. Almost universal.
9. Four to six feet in deep in diameter; four to ten feet deep.
10. No.
11. No.
12. Know of only two or three.
13. Dumped into the privy vaults or thrown upon the ground.

SHARONVILLE—Population, 500.

REPLIES BY W. W. STREETER, M.D.

Water Supply.

1. Wells and cisterns.
2. No, and none contemplated.
6. Two-thirds.
7. The ordinary dug and stone-walled ones.
8. Fourteen to twenty-eight feet.
9. None obtained.
10. River bottom loam with strata of clay and gravel sublaid.
11. To the fullest extent.
12. Nearly all failed.
13. Typhoid and intermittent fevers prevailed more than they had for six years.
14. One-third.
15. No.
16. With brick walls laid in and covered with cement.
17. Yes.
18. Gastric and enteric (diarrhœal and febrile), perhaps, one-sixth in amount.

Disposal of Sewage.

1. None.
8. Almost universal, the exceptions being that many are simply shallow holes in the ground
9. Two to four feet.
10. No.
11. No.
12. There is but one in the whole township.
13. Thrown on the surface.

Wells in country towns and districts could be fairly well protected from pollution if the walls were continued upward from two to three feet or more above the surface surrounding, and then properly graded off. A statute to that effect would make it more impressive.

SPRINGDALE—Population, 450.

REPLIES BY GEO. B. WILMUTH, M.D.

Water Supply.

1. Wells and cistern.
2. None.
6. Nearly altogether; a few use cistern water.
7. The common well, dug from four to six feet diameter.
8. From twenty to forty feet.
9. No artesian wells.
10. What may be called first class limestone; walnut, beach suger tree land.
11. Wells generally situated from one hundred to two hundred feet from vaults.
12. Seven-tenths of them failed.
13. Health generally good.
14. One-fifth.
15. Sometimes filtered through charcoal.
16. Brick and stone cemented, holding from one hundred to three hundred barrels.

Disposal of Sewage.

1. None.
8. Every house has one.
9. From four to eight feet in width and same in depth.
10. No.
11. No.
12. A few use them.
13. As manure for crops on the surface of ground; garbage and slops fed to hogs.

HANCOCK COUNTY.

BENTON RIDGE—Population, 200.

REPLIES BY J. R. M'LEOD, M.D.

Water Supply.

1. Wells.
2. No.
6. We use well water altogether for drinking and mostly for cooking.
7. They are dug from three to five feet in diameter and walled with brick or large sewer tile.
8. Fifteen to twenty feet.
9. We have none.
10. We are on a ridge of sand and gravel. The water is found in a bed of quick sand.
11. Privy vaults are usually fifty to one hundred feet from the wells, and drainage would pass through sand and gravel.
12. Many failed; water was not tested but appeared pure and wholesome.
13. No; we had several cases of typhoid fever among men who had been working on tank yard near Findlay.
14. None.
17. I think I have.
18. The typhoid cases above mentioned were doubtless caused by using impure water where they were working, but were easily managed here on pure water.

Disposal of Sewage.

1. None.
8. Altogether.
9. Perhaps three by four feet, and five or six feet deep.
10. No.
11. No.
12. I know of none.
13. The night soil usually goes into the privy vaults, and the slops and garbage to the pig pen or garden.

Our water appears to be exceptionally pure and wholesome, and our hamlet and vicinity are remarkably healthy.

CANNONSBURGH—Population, 500.

REPLIES BY M. M. SAYLOR, M.D.

Water Supply.

1. Wells.
2. No.
6. Exclusively.
8. Sixteen to twenty-five feet.
9. At a depth of about ninety feet in the rock a vein of sulphur water is found, rising within about four to six feet of the top, and in some cases running over.
10. Clay and marsh lands.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

HANCOCK COUNTY.—Continued.

12. Water very low and in a great many no water.
13. Typhoid fever.
14. None.
17. Yes.
18. In one family three cases of typhoid; well used for drinking water pumped dry daily; ordered water used from a neighbor in whose well water was plentiful, and no new cases developed.

Disposal of Sewage.

1. None.

The well on the farm where the typhoid cases occurred is sixteen feet deep and about five hundred feet from a burying ground. After the first rain this fall, some water came into the well, and the family began using it again but were compelled to stop; both the husband and wife were made sick by the use of it.

McCOMB—POPULATION, 1,350.

REPLIES BY PERRY WALTMAN, M.D.

Water Supply.

1. From wells and one spring.
2. No; none contemplated.
6. Entirely, except one spring.
7. Wells to the sand and to the rock.
8. Thirty to sixty-five feet.
9. Do not know; have none.
10. Blue clay and limestone.
11. Very small extent.
12. Mostly dry except they were very deep.
13. No.
14. Very limited.
15. Partly filtered before storing.
17. I have.
18. In one family eight were sick with persistent vomiting and purging, which returned on attempting to use the water again. This occurred in the country.

Disposal of Sewage.

1. One mile, about.
2. Do not know.
3. By cast iron tops with openings.
4. Twelve inches.
5. None; just one main sewer.
6. In a creek just out of town.
7. None.
8. Entirely.
9. Three feet, about.
10. No.
11. No.
12. None.
13. No regular method; it is disposed of in every way.

Too much surface water is allowed to escape into wells. This was the cause, I think, in the case of sickness I mentioned.

HARDIN COUNTY.

ADA—POPULATION 2,300.

REPLIES BY L. W. CAMPBELL, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost entirely.
7. Dug and driven.
8. From 20 to 27 feet—average about 25 feet.
9. Never found.
10. Clay; at the depth of about 20 feet limestone rock; two feet above rock rock, etc.
11. Vaults are about one hundred feet from wells.
12. There was a small per cent. failed.
13. No.
14. Very little.
17. Can't say that I have.

Disposal of Sewage.

1. About two miles of main sewer and three of lateral.
2. Not permitted.
3. Man-holes about every 500 feet.
4. Main 24 and 18 inches.
5. About six inches.
6. Into an open ditch about four feet deep and ten feet wide at top.
7. No.
8. Universal.
9. About 4 by 6 feet, and 3 deep.
10. No.
11. No.
12. Very little, but are coming into use.
13. By feeding to hogs and throwing upon the ground.

DUNKIRK—POPULATION 1,800.

REPLIES BY W. H. WISE, M. D.

Water Supply.

1. From wells.
2. No.
6. To a great extent, or entirely.
7. Some drilled wells and some just to rock and walled.
8. Drilled 20 to 35 feet; dug 10 and 15 feet.
9. No artesian wells here.
10. It's a black loam, some clay, all limestone, where the wells are located.
11. Some wells are liable to contamination, I think.
12. All surface wells were dry, but wells that were drilled 25 to 38 feet held out well.
13. I think not.
14. Very little is used.
15. Not many cisterns are filtered, and generally before.
17. Not here.
18. All the sickness in this locality this season has been measles—about 300 cases—but it was brought here by visitors.

Disposal of Sewage.

1. All the sewerage here is of tile, underground.
2. Not very many.
6. Water that passes through these tile empties into shallow ditch north of town.
7. I think not; have heard no complaint.
8. Most of our privies are set on top of ground; some few are dug three or four feet in ground and planked.
10. Hardly ever.
11. No; every man builds just as he pleases.
12. Not any.
13. Night-soil is generally put in privies; kitchen garbage and slops thrown out on lots and given to hogs.

Wells that are drilled deep are piped generally with 3-inch pipe, and I think are all right; but the surface wells I do not think are. People this season use the town wells, and they are drilled deep.

KENTON—POPULATION, 6,000.

REPLIES BY C. H. SMITH, M. D.

Water Supply.

1. Wells and Holly water works.

HARDIN COUNTY—Continued.

2. Yes.

3. (*a*) Water sometimes has been taken from Scioto River at low water; scarcely any current. (*c*) Hard from lime.

4. (*a*) One-fourth mile south of town. (*b*) One made of stone; it is about one-half acre; I don't know its capacity, as the new wells furnish all the water. (*c*) None.

5. A very large amount.

6. About half or more.

7. Mostly dug; some drove.

8. From ten to eighty feet.

9. At about three hundred feet.

10. Blue clay.

11. Very much so.

12. Most all dry.

13. No; none whatever, as most all had to resort to water works.

14. Not much.

17. None this year.

Disposal of Sewage.

1. Five or eight miles; may be ten now.

2. About one-fourth.

3. Man-hole.

4. Two feet, west of town; two to three, east.

5. Six to ten inches.

6. Scioto River.

7. None whatever.

8. Fully more than three-fourths.

9. Generally shallow.

10. No.

11. No.

12. None.

14. None.

13. Generally thrown about houses.

The water seems to have done no harm, as it has never been so healthy a summer, fall, or winter.

ROUNDHEAD—POPULATION, 250.

REPLIES BY J. S. NEVILLE, M. D.

Water Supply.

1. Wells.

2. None in use; none contemplated.

6. Entirely.

7. Dug and driven.

8. Twenty-two feet.

9. None found.

10. Gravel and sand.

11. None nearer to such places than one hundred feet.

12. Plenty of water in nearly all the wells.

13. None; a few cases of typhoid.

14. None.

17. Yes; plenty of cases.

18. Typhoid and malarial fevers.

Disposal of Sewage.

1. None.

8. Most of the citizens have them.

9. Six feet.

10. Yes.

11. No.

12. Some use them.

13. Mostly thrown in alleys or on manure piles.

The only pollution to which our supply is iable is from the privy vaults.

HARRISON COUNTY.

CADIZ—POPULATION, 1,900.

REPLIES BY GEORGE C. WELCH, M. D.

Water Supply.

1. Wells almost exclusively.

2. No; no.

6. Almost exclusively for drinking and culinary purposes.

7. Principally dug, with a few bored.

8. Thirty to forty feet.

9. Never were any sunk.

10. Limestone, underlaid with coal.

11. Very slight. In most instances ground falls from wells.

12. All low; some failed for a time entirely.

13. There was not; on the contrary, the fall seemed unusually healthy.

14. To a very limited extent.

15. Usually filtered before storing.

17. Not any, and was a close observer all the time.

Disposal of Sewage.

1. There is not a sewer in the town; depend entirely on surface drainage.

8. Almost exclusively.

9. About three by eight feet, and five feet deep.

10. No.

11. No.

12. To a limited extent.

13. Former allowed to find its own way off through the earth from the vaults. The latter by surface drains.

Our town is so situated that underground sewers are unnecessary, surface drainage being amply sufficient.

FREEPORT—POPULATION 600.

REPLIES BY R. J. PUMPHREY, M. D.

Water Supply.

1. Wells.

2. No, nor is there any contemplated.

6. Exclusively.

7. Mostly drilled wells.

8. Forty to sixty feet.

10. Sandy and yellow clay.

11. To a very small extent; only a very few where contamination is possible.

12. Very low, most of them entirely dry.

13. No.

14. Not used at all.

17. No, not in our town, water from another town caused typhoid fever in a patient of mine.

Disposal of Sewage.

7. Most all use vaults.

9. Four to six feet deep, five to six feet wide, three feet across.

10. No.

11. No.

12. Very few.

13. Mostly thrown on lot or in drain; night-soil in privy vault.

We only have a few sewers, and they are only for carrying off rain water.

GERMANO—POPULATION 280.

REPLIES BY J. W. NIXON, M. D.

Water Supply.

1. Well water. Our town is situated on a high ridge.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

HARRISON COUNTY—Continued.

6. Entirely for drinking and cooking.
7. Drilled and dug.
8. Thirty to sixty feet.
9. Not known.
10. Limestone soil.
11. Not any.
12. A few wells went dry, but more than one-half stood the drouth.
13. I have been in the town eight years, and I never saw less disease than we have had the last six months.
14. None.
17. Not in our town.

Disposal of Sewage.

1. None.
8. Entirely, vaults are used by every family.
9. About two to five feet.
10. A few are.
11. No.
13. It is quite generally buried with earth and coal ashes; deposited on the soil or carried away in small pipes under ground.

The only danger I can see is from surface water, but the lay of the ground is so rolling and steep that nature drains our town.

HARRISVILLE—Population 400.

REPLIES BY A. B. WILKIN, M. D.

Water Supply.

1. Wells.
2. None, nor any contemplated.
6. The only kind used.
7. The old-fashioned wooden pump.
8. About thirty feet.
9. None in this section of the country.
10. Lime.
12. Very low.
13. We had an unusually healthy fall and winter this year.
14. None used.
16. Hydraulic cement.
17. Have not.

Disposal of Sewage.

8. Have none.
12. That is the kind principally used.
13. Principally thrown out on the ground.

HOPEDALE—Population 414.

REPLIES BY JOHN D. WEST, M. D.

Water Supply.

1. Springs and wells.
2. None, nor none contemplated.
6. About two-thirds of the water used is from wells.
7. Both dug and bored.
8. The bored wells are from fifty to ninety feet.
9. No artesian wells.
10. Sand and limestone.
11. But little liability; surface water is generally well excluded.
12. But little apparent change was made upon deep wells; shallow wells failed in supply.
13. There was more sickness when the water was scarce, but we had a very healthy season.
14. There are only a few that are used for drinking.
15. Before storing.
17. Not to any considerable extent.
18. Stomach and bowel troubles, vomiting and diarrhœa.

Disposal of Sewage.

1. No sewerage; town is small.
8. Generally used.
9. About four feet.
10. No.
11. No.
12. Not largely; I use that kind, and have it cleaned frequently.
13. Thrown in chicken lots, surface drains, etc.

The water of this village is generally quite pure, and buildings are not compact but scattering.

SCIO—Population, 700.

REPLIES BY D. J. SNYDER, M. D.

Water Supply.

1. Wells and springs.
6. Nearly the whole town is supplied with them.
7. Dug and drilled.
8. Fifteen to thirty feet.
10. Stiff, heavy clay and freestone rock.
11. About twenty-five feet.
12. Water supply was abundant.
13. Never had a healthier period since my residence in this place.
14. Not any.
17. No.

Disposal of Sewage.

8. General.
9. Seven feet deep.
10. No.
11. No.
12. None.
13. Thrown in back yard.

HENRY COUNTY.

HAMLER—Population, 400.

REPLIES BY C. M. THOMPSON, M. D.

Water Supply.

1. Wells.
2. No.
7. Drilled and bored.
8. Forty-five to sixty feet.
9. There has been no chemical analysis made of the water.
10. Clay.
11. They are generally a good distance from privies—from two to three hundred feet.
12. There was plenty of water in most of them; a few went dry.
13. No.
14. None.
17. Not in our village.
18. In the country have found one case of typhoid fever, due to water from surface-well situated not far from privy.

Disposal of Sewage.

1. None.
2. None
8. Exclusively.
9. From one to three feet deep.
10. No.
11. No.
13. Generally thrown out in back part of lot or fed to hogs; night-soil generally thrown in privy or alley.

There is no sanitary regulation; garbage

HENRY COUNTY—Continued.

and kitchen slops are generally thrown out in alleys back of lots, and we cannot see why diseases of a contagious nature are not more numerous.

NAPOLEON—Population 3,500,.

REPLIES BY T. C. HUNTER, M. D.

Water Supply.

1. Wells and cisterns.
2. No, and none contemplated.
6. Almost universally.
7. The old-fashioned dug and walled.
8. 10 to 45 feet.
9. A well in process of boring for gas struck artesian water at 250 feet; strong sulphur; never analyzed.
10. Erie clay.
11. Vaults, cess-pools and stables, etc., on nearly every lot; must contaminate water greatly.
12. Many entirely dry; the remainder very low.
13. A few cases of typhoid fever.
14. Quite limited; only a few using it.
17. Have known of some, but did not treat them.
18. Typhoid fever—a few cases.

Disposal of Sewage.

1. Perhaps one mile.
2. Don't know.
3. Through the catch basins and houses.
4. Eighteen inches.
5. Eight inches.
6. Into the Maumee River and one into the canal.
7. I have not examined, but it certainly would contaminate the water.
8. They are universal.
9. Do not know; perhaps 3 by 4 by 5.
10. I think not.
11. No; when they get full they are covered up and a new one dug.
12. Not at all
13. Either thrown on the ground or into privy vaults.

We have no Board of Health, and pay no attention to sanitation. Every one makes out for himself. We are offering every inducement for cholera to visit us.

PLEASANT BEND—Population 190.

REPLIES BY J. A. BOWDLE, M. D.

Water Supply.

1. Wells are the only source of supply in the town and country.
2. Neither in use nor contemplated.
7. Generally dug wells, walled with brick.
8. From ten to twenty feet.
9. There is none in this part of the country.
10. Black loam for the first two or three feet, then clay until we strike the gravel, in which water is found.
11. They are located so far from privy vaults there is no danger of contamination.
12. Those not down to the gravel went dry, the water was used until there was no more to use.
13. There was no unusual prevalence of any form of disease seemingly due to this condition.
14. At North Creek, three miles south, there are quite a number of cisterns.
15. It is generally strained before using.
16. They are made of plank, or a large sycamore gum or hollow log put into the ground.
17. I have, and quite a number of them.
18. I would find the cases with distended stomachs, tympanites of same; vomiting, headache, and a high grade of fever.

Disposal of Sewage.

8. Not in use here.
12. None in use to my knowledge.

HIGHLAND COUNTY.

BUFORD—Population 150.

REPLIES BY JOHN W. MATTHEWS, M. D.

Water Supply.

1. Wells and cisterns.
2. We have no system of water works and none is contemplated.
6. Entirely, with a few exceptions.
7. They are about twenty feet deep, and are walled with rock.
8. Twenty feet.
9. We have none.
10. It is porous and has no layer of rock to keep the water from soaking through.
11. Not to any extent.
12. Mostly dry.
13. None.
14. To a very small extent.
15. It is not filtered.
17. No.

Disposal of Sewage.

1. None.
8. None.
18. Generally thrown out upon the ground; the kitchen garbage is put in the slop barrel for the pigs.

FAIRFAX—Population 100.

REPLIES BY O. C. HOOK, M. D.

Water Supply.

1. Wells.
2. None; none contemplated.
6. Entirely.
7. Common, with pumps.
8. Fifteen to twenty-five feet.
9. None found.
10. Yellow clay, blue clay, and limestone.
11. To no extent; they are situated a considerable distance from them.
12. Very low, but in pretty good condition.
13. None.
14. Very small.
15. Not filtered.
16. With brick walls and cemented.
17. No.

Disposal of Sewage.

13. It is generally washed away in the gutters.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

HIGHLAND COUNTY—Continued.

GREENFIELD—Population 800.

REPLIES BY R. S. DUNLAP, M. D.

Water Supply.

1. Wells.
2. No water works; none contemplated.
6. Universally.
7. Wells are mostly dug to the underlying rock, though some are drilled quite a distance, say twenty or thirty feet into the rock.
8. From fifteen to twenty feet.
9. Not known.
10. The soil varies, generally clay and gravel (glacial drift).
11. They are generally within from thirty to a hundred feet of each other.
12. The great majority very low, and some were entirely dry.
13. The health of the community was better than usual this fall.
14. To a very limited extent.

Disposal of Sewage.

1. Very little underground sewerage.
2. One hotel.
3. Upon inquiry I find at least one-half the community do not use vaults.
9. Four or five feet.
10. No.
11. No.
12. Very little.
13. Thrown upon the ground.

HIGHLAND—Population 250.

REPLIES BY L. M. GREENE, M. D.

Water Supply.

2. None in use, and none contemplated.
6. It is used altogether.
7. The wells are dug and walled with stone.
8. About thirty feet.
9. No artesian well has ever been sunk here.
10. The soil is a yellow clay, underlaid with a blue clay, under which is gravel and sand.
11. There is exceedingly little liability of such contamination here.
12. Several were dry, and all very low. Our public well and a few others seemed but little affected by dry weather.
13. Not in our town. Health was very good in town, but there was some typhoid and malarial fever in surrounding country.
14. I think not at all.
17. I had one family that I am sure was affected by the drinking water.
18. In the above family there were five cases of remittent fever, including the entire family. Water was low, looked bad, and smelled bad, but was never analyzed.

Disposal of Sewage.

1. None.
8. Not at all.
11. The emptying of privies is regulated by ordinance.
12. Not at all.
13. Night soil usually cast into privies; kitchen garbage, etc., goes into slop tubs, and is fed to pigs.

HILLSBOROUGH—Population 4,000.

REPLIES BY E. & B. F. HOLMES, M. D.

Water Supply.

1. Wells, cisterns, and springs, and a few reservoirs for manufacturing purposes.
2. None in use; contemplated.
6. Almost exclusively.
7. Common wells; no artesian.
8. Twenty to eighty-five feet deep.
9. No artesian wells. Drill, 1,700 feet; fetid water; similar to blue lick at 1,200 feet; at 1,700 feet salt water; drill plugged.
10. Clay soil; limestone underneath, near the surface, cropping out above ground in many places.
11. To great extent. The stone surface so near the top of ground forms water shed, emptying surface water into the wells before it is sufficiently filtered.
12. Many of them failed.
13. No; there was very little sickness of any kind.
14. Not very extensively.
15. Where used, it is filtered before.
16. Too near the surface; lined with brick and cement; inside filter.
17. None clearly demonstrated.
18. None traceable to impure water alone.

Disposal of Sewage.

1. Less than one mile.
2. From ten to twelve or more.
3. Only from the outlet.
4. Eighteen inches.
5. From four to six inches; a few from twelve to twenty-four inches.
8. Very general.
9. From four to ten feet.
10. No.
11. To some little extent.
12. Very few in use.
13. Carted out, and many times dumped in or near some brook or rivulet outside of town.

The greatest misfortune of our place is the close proximity of the substratum of limestone to the surface of the earth, forming a drainage of surface water into our wells before it is sufficiently filtered, not only from the unavoidable filth of the surface, but from privy vaults, etc.

LYNCHBURGH—Population 1,100.

REPLIES BY ISAAC HOLMES, M. D., H. O.

Water Supply.

1. Wells.
2. No; none contemplated.
3. Altogether.
7. Common wells, walled with stone.
8. Fifteen to twenty feet.
10. Black, loamy, and sandy.
11. Cannot tell, but to some extent I know.
12. Plenty and good in most of the wells.
13. There was, but it was quite healthy.
14. None.
17. None.

Disposal of Sewage.

1. No sewerage.
8. Probably one-half the town.
9. From four to eight feet deep; from three to five feet in size.
10. No.
11. They have been, from last year up to the present time.
12. None.
13. Generally dumping it in the alleys and backyards; that has been the rule up to last year.

NEW PETERSBURGH—Population, 300.

REPLIES BY RUFUS A. DWYER, M. D.

Water Supply.

1. Wells.
2. No system, nor any in contemplation.
6. Exclusively.

HIGHLAND COUNTY—Continued.

7. The ordinary old-fashioned walled without mortar or cement.

8. About twenty to twenty-three feet.

9. None.

10. About one foot of loam; some eight feet to rock; others twenty feet to rock.

11. I don't think any are one hundred feet distant; some less than fifty. The immediate neighborhood at many places is the favorite locality for urinating.

12. Some entirely dry, others very muddy; not two feet of water.

13. There were only two cases of typhoid fever this summer; scarlet fever was very prevalent. not a fatal case.

14. None.

17. I think typhoid fever referable to impure water.

18. Typhoid fever and diphtheria usually caused by impure water soaking from privies.

Disposal of Sewage.

1. No sewers here, but plenty of sewage.

8. The privy sinks are not walled, but simply holes dug in the ground.

9. About two feet deep; just the right depth to find a ready percolation.

10. Not one.

11. No ordinance or rule that I ever heard of.

12. None.

13. Thrown into the streets and alleys, and slop to hogs.

I know of no method or means used equal to the source already given.

RAINSBOROUGH—POPULATION, 250.

REPLIES BY D. N. M'BRIDE, M. D.

Water Supply.

1. Wells exclusively.

7. Private.

8. Twenty-eight to thirty-five feet.

10. Clay.

11. None.

12. Very low; some failed entirely.

13. No.

14. None used.

17. None in village.

Disposal of Sewage.

1. None.

SAMANTHA—POPULATION, 200.

REPLIES BY F. M. THOMAS, M. D.

Water Supply.

1. Water is supplied entirely by wells.

2. None in use, nor is any contemplated.

6. No other water used.

7. Wells are dug through soil and clay, and walled with limestone.

8. Twenty to thirty feet.

9. Do not know, as no artesian wells have ever been bored here; no attempt has been made.

10. The top is black loam, beneath which is a tenacious yellow clay.

11. I should think the liability less than that of the average town of its size.

12. Very low, some of them dry.

13. No; we have had much less sickness in our town in the last six months than during any corresponding time in the last ten years.

14. Not used at all.

17. No, not very certainly.

Disposal of Sewage.

1. None.

8. Every residence has a privy.

9. Two by two and six feet deep.

10. No.

11. No; when cleaned out the contents are placed in manure pile and sold to farmers.

12. None.

13. Various.

HOCKING COUNTY.

CARBON HILL—POPULATION, 500.

REPLIES BY C. F. APLIN, M. D.

Water Supply.

1. Wells.

2. None in use or contemplated.

6. Almost universally for drinking and cooking.

7. Common stone walled.

8. About eighteen feet.

9. None here.

10. Clay soil; water in quick sand, below a stratum of blue clay.

11. Generally, to a very small extent.

12. Water low, but very fair in quality.

13. None.

14. Very few. almost none.

17. Think not.

Disposal of Sewage.

1. None.

8. In universal use here.

9. Three by four feet; four feet deep.

10. No.

11. No; we have no board, are not incorporated.

12. None here but mine.

13. Kitchen slops into alleys and gutters. When a vault becomes "too full" move the building and fill up old vault.

There is a pond in town, the drainage of which is almost cut off by the railroad, the pipe under the track being obstructed. I think it has been the cause of much sickness, in at least two wet seasons. This year it dried up and killed the vegetation before fall. There are facts connected with it that are interesting.

SOUTH PERRY—POPULATION, 200.

REPLIES BY T. IRWIN, M. D.

Water Supply.

1. Nearly entirely from wells.

2. No.

6. Altogether, except one family, from a spring.

7. Dug and walled with stone.

8. From fifteen to twenty feet.

9. About three miles above, between four hundred and five hundred feet, a large volume of water, apparently impregnated with sulphur and iron.

10. Arenaceous and argillaceous.

11. Very little, if any.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

HOCKING COUNTY—Continued.

12. Many became dry; a few held out well, failing *very* little.
13. None that I could discover.
14. Very little, if any.
17. None occurs to me now.

Disposal of Sewage.

1. None.
8. Nearly every house provided with one.
9. About two feet wide, four or five feet long, and three or four feet in depth.
10. In no instance known to writer.
11. No regulations.
13. As fertilizers for gardens.

From the side of a lofty hill, just north of town, issues a spring of the purest water I ever saw come out of the earth. It will make a solution of *argenti nitras* perfectly transparent, the only instance of *spring* water known to me.

HOLMES COUNTY.

BLACK CREEK—POPULATION 400.

REPLIES BY A. L. JONES, M.D.

Water Supply.

1. Wells exclusively.
7. Dug.
8. From fifteen to thirty feet.
10. Clay and gravel.
12. Some wells partially failed.
13. No; nor to any other cause, as there was no sickness.
14. Not at all.
17. No.

Disposal of Sewage.

8. Entirely.
9. From four to six feet.
10. No.
11. No.
12. None.
13. Part to hogs; part thrown out in back yards.

HOLMESVILLE—POPULATION 400.

REPLIES BY EDGAR COLE, M.D.

Water Supply.

1. Wells.
2. No.
6. It is used for drinking and cooking purposes.
7. Dug wells stoned up; two or three tile wells; five or six bored wells, gas pipe casing.
8. Thirty-five to fifty feet.
10. Sandy loam on surface, clay, gravel hard pan, then gravel until you reach fine sand, and here is where the water is found.
11. I think they are not liable to contamination.
12. Good; I don't think one went dry or was much lowered in water supply.
13. No.
14. Hardly ever used.
17. No.

Disposal of Sewage.

1. Not any.
8. Nearly all.
9. Five feet deep by four by six feet.
10. No.
11. No.
12. Not any in use.

KILLBUCK—POPULATION 300.

REPLIES BY STROUSE AND GUILTARD, M.D'S.

Water Supply.

1. Wells.
2. No water works in use; none contemplated.
3. (*a*) A small amount from river Killbuck.
7. Simply dug and walled up with stone; there are a few wells driven.
8. From eight to ten feet deep.
10. Gravel combined with quick sand.
11. I think all are contaminated from manure heaps and privy vaults from the fact that after a rain the water is colored.
12. Most of them went dry.
13. None.
14. To no extent.
17. I have.
18. Intestinal disturbance; typho-malarial fever in three or four instances.

Disposal of Sewage.

8. Exclusively.
9. Width, four feet; depth six to eight feet.
10. No.
11. No.
12. To a limited extent, if at all.
13. Given to hogs, dogs and cats.

In fifteen or twenty years hence, privies will have been so changed from place to place that Killbuck might be, with propriety, called the privy vaulted city of Ohio, unfit for habitation.

MILLERSBURGH—POPULATION, 2,900.

REPLIES BY S. P. WISE, M.D.

Water Supply.

6. About nine-tenths of the water is taken from wells.
7. Mostly dug.
8. From twenty to thirty-five feet.
9. Don't know.
10. The shallow wells penetrate the gravel bed to the clay; the soil is gravelly most everywhere.
11. The liability is great, as they are frequently situated in dangerous proximity.
12. Some of them went dry.
13. None.
14. About one-tenth.
15. Yes; after storing.
16. Walled with brick and cemented.
17. I have; but not this season.
18. Typhoid fever; endemic in localities, distinctly traceable to persons using water from the contaminated well.

Disposal of Sewage.

1. About one-fourth mile.
2. Three or four.
3. No ventilation.
4. Nine inches.
5. Four to five inches.
6. Into a stream.
7. No.
8. Universally.
9. Six to eight feet.
10. None.
11. No.
12. None.
13. Thrown into back yards, and carted away once or twice a year.

HOLMES COUNTY—Continued.

WINESBURG—Population, 236.

REPLIES BY P. SHALLIOLL, M.D.

Water Supply.

1. From wells entirely.
2. No water works, and none contemplated.
6. Well water is used altogether.
7. Dug wells and walled with stone.
8. From thirty to fifty feet deep.
9. We have no artesian wells.
10. It is a sandy loam; with few exceptions clay.
11. Generally well protected from the infection of privy vaults.
12. Good, with a liberal supply of water.
13. No.
14. Cistern water is not used for drinking purposes.
17. Cannot say that I have.

Disposal of Sewage.

8. They are used exclusively.
9. From surface down to three or four feet.
10. No.
11. No.
12. Not in use.
13. Night-soil goes to privy-vaults, garbage and slops to hog pens.

Our water supply is generally in good condition throughout our town with a few exceptions, where the curbing around the wells is rotten admitting surface water.

HURON COUNTY.

EAST TOWNSEND—Population 800.

REPLIES BY J. F. GRABILL, M. D.

Water Supply.

1. We get all our water from wells in our village.
2. No.
3. Have no river nor stream.
7. Dug and walled up with stone.
8. From 16 to 26 feet.
10. Clay soil, with some quick-sand.
11. To the full extent; have no sewer or drainage of any kind.
12. Nearly all dry; a few wells furnished water enough to supply the village.
13. Not seemingly.
14. None.
17. I think not.

Disposal of Sewage.

8. To full extent.
9. From 1 to 4 feet; or, to state it correctly, a small hole dug out.
10. No.
11. Neither.
13. It is thrown into back yards generally.

It is a source of wonder to me that the water we use does not make all of us sick, as privies, old stables and barns are built almost at side of wells. The earth must be a good filterer.

MONROEVILLE—Population 1,500.

REPLIES BY C. L. KREIDER, M. D.

Water Supply.

1. Wells.
2. No.
3. No. (c) Lime.
6. Entirely.
7. Lined with brick or stone.
8. About 15 feet.
9. Don't know.
10. Black slate.
11. But few cases, if any, have been known.
12. Great many were dry.
13. No.
14. But few families use cistern water.
15. Most cisterns are built with brick, wall through center.
16. Arched brick, cemented with water lime.
17. Yes.
18. Have seen diphththeria from slops near the house and wells, and typhoid fever from wells too near barn-yards; but this is not common.

Disposal of Sewage.

1. None.
8. Entirely.
9. Many are on surface, and none over five feet deep,
10. No.
11. No.
12. None.
13. They are usually buried in gardens.

JACKSON COUNTY.

COALTON—Population 1,200.

REPLIES BY A. C. MESSENGER, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. About three-fourths.
7. Walled and drilled.
8. 28 to 60 feet.
9. No artesian wells here.
10. Clay.
11. Some are very liable to receive poison, being in low ground.
12. Very low, but not any more sickness than usual, and no epidemic.
14. About one-fourth.
15. No.
16. Of brick, with cement lining.
17. Very few lately.

Disposal of Sewage.

1. No sewers.
8. No other kind used.
9. 6 feet deep and 5 by 3.
10. No, boxed.
11. No.
12. Not at all.
13. Throwing out on ground and emptying in vaults.

Part of town situated low in a valley and subject to usual sources arising from no sewerage, and slops being thrown upon the surface of ground.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

JACKSON COUNTY—Continued.

WELLSTON—POPULATION 5,000.

REPLIES BY J. B. SPENCER, M. D.

Water Supply.

1. Wells and cisterns.
2. One is contemplated this year.
6. Altogether, with exception of a few cisterns.
8. Fifteen to twenty-five feet.
9. No artesian wells have ever been bored here.
10. Principally sandy soil.
11. Some wells and privy vaults are within ten feet of each other.
12. A great many went dry almost.
13. There was not as much as I have seen when water was plenty.
14. Hardly any.
15. No, it is seldom, if ever, filtered.
16. Walled up with brick and cemented.
17. To some extent.
18. Principally malarial and intestinal troubles.

Disposal of Sewage.

1. None.
8. There is not a regular vault in the town.
9. They vary from a little hole to ten feet deep.
10. No.
11. No.
13. Generally, when the hole gets full, they will set the house over another little hole and throw a little dirt over the old one, while some garbage and slops is thrown into the streets.

There is no interest taken in regard to hygienic measures at all, everyone allowed to do as he pleases in the matter.

JEFFERSON COUNTY.

BAGHOLZ.

REPLIES BY D. G. ALLEN, M. D.

6. Well water is used altogether.
7. Principally dug wells.
8. Twenty feet.
9. No search has ever been made for artesian water.
10. Along the creek bottom, sandy soil, on the hill, clay soil.
11. Very few are liable to contamination.
12. A good many went dry.
13. There was no prevalence of any disease seemingly due to this condition.
14. No cistern water used for drinking.
17. No impure water used.
18. We have had very little sickness the last year.

Disposal of Sewage.

1. We have no sewers in our town yet.
8. All have privy vaults.
9. Four feet by six and four feet deep.
10. Usually cemented.
11. I think not.
12. To a very little extent.
13. Night-soil is disposed of in privy vaults; kitchen garbage and house slop generally put into slop barrel.

MT. PLEASANT—POPULATION 900.

REPLIES BY J. J. OSBURN, M. D.

Water Supply.

1. From wells and cisterns.
2. None in use nor contemplated.
6. Exclusively, for drinking and cooking purposes.
7. Dug and walled.
8. About thirty feet.
10. More or less polluted with garbage of different kinds.
11. Some of them are within fifty feet of an open privy.
12. With few exceptions, very low, and some entirely dry.
13. No.
14. Not at all.
17. Yes.
18. Different diseases of enteric nature affecting more than half the population within a period of two weeks.

Disposal of Sewage.

1. None.
8. Not one in the town.
11. No.
12. Not at all.
13. Dumping them into the back yard or alley, which is the final receptacle for all filth.

STEUBENVILLE—POPULATION 15,000.

REPLIES BY A. A. ELLIOTT, M. D., H. O.

Water Supply.

1. River.
2. We have an excellent system of works.
3. (*a*) Ohio. (*b*) Maximum size, 34 feet; minimum, 30 inches; rate of current unknown, but very swift. (*c*) Excellent, except during heavy rains and spring freshets. (*d*) Toronto above, 7 miles; Mingo below, 3 miles.
4. (*a*) Water-works on river bank; supply pipe extends to middle of river. (*b*) Two reservoirs blasted from shale, walled with brick and stone, cemented bottoms. Capacity, 2,500,000 gallons. (*c*) No filter yet; one is contemplated.
5. 500,000 gallons, with capacity of 1,000,000 gallons.
6. In one ward of the city a portion is supplied by wells and springs.
7. Ordinary excavated stone-walled well.
8. 20 to 50 feet.
9. None has ever been bored for.
10. Limestone.
11. Am unable to find that there is any particular danger from this source.
12. They were low.
13. No.
14. A very small number use it.
15. Not generally.
16. Cemented.
17. None that I could trace to this cause.
18. There has not been in this city any disease the past year that could be traced to drinking water.

Disposal ef Sewage.

1. There are no sewers in this city.
8. Entirely.
9. 6 to 10 feet in depth, 3 by 6 in length and breadth (about).
10. No; in a portion of city they are in gravel and give no trouble; in the clay soil they are at times troublesome.
11. No, only when offensive.
12. I know of no one using the earth closet.
13. Carted outside city limits.

Our water supply furnished by the city is perfect, both as to quantity and quality, except as stated during spring floods and very heavy rains.

KNOX COUNTY.

BRANDON—POPULATION 150.

REPLIES BY H. VIGOR, M. D.

Water Supply.

1. Wells.
2. No.
6. It is in general use.
7. Open mostly, and walled up with brick, or boulders.
8. From twelve to thirty feet.
9. There is none in our town.
10. Common clay, impregnated with lime.
11. There are a few that are not over fifty feet from the wells, but the most of them are one hundred feet or more.
12. Three-fourths afforded not more than 2 bucketsful per day during August, September, and October, and have not had a full supply up to January 1st; but we have not had any rain.
14. Very few use it for drinking or culinary use.
15. No especial attempt is made to purify it.
17. Not more than one per cent. of population.
18. A few have had bowel complaints since the water became polluted in open, shallow wells.

Disposal of Sewage.

1. Not any.
8. I have no knowledge of any privy vaults in this township.
9. They are very shallow; not many over two feet deep.
10. Not any; but simply shallow holes.
11. No.
12. I do not know of any in the township.
13. Some mix with dry earth or ashes, and use it as fertilizers merely to get more space for future deposits.

FREDERICKTOWN—POPULATION 900.

REPLIES BY W. W. PENNELL, M. D.

Water Supply.

1. From wells.
2. None in use; none contemplated.
6. Altogether.
7. Dug and bored wells.
8. From twenty to eighty feet.
9. Have no flowing wells in town.
10. Gravel and sand.
11. To a very limited extent.
12. Some entirely dry; all others low.
13. Dysentery and diarrhœa.
14. In a very few families.
15. Filtered before storing in some; others after.
16. Of brick, lime, and cement.
17. Think our dysentery was caused by impure water.
18. General dysentery or epidemic dysentery in town and country, where low water prevailed. Had several cases of typhoid fever, apparently due to same cause.

Disposal of Sewage.

1. None.
8. General use.
9. Four feet long, three feet wide, and six feet deep.
10. No; are bricked or planked up at sides; bottom open.
11. No.
12. Not used.
13. Slops go into surface drains, and are carried off by rains, or they are absorbed into the earth, while other materials are hauled to the creek bed and washed away.

From defective well tops rats, mice, bugs, and pieces of timber fall into wells, and may thus pollute the water.

GANN—POPULATION 500.

REPLIES BY J. D. SMITH, M. D.

Water Supply.

1. Wells.
2. There is none, and none contemplated.
6. The majority use well water.
7. Both open and drove wells.
8. From twenty to sixty feet.
10. Gravel.
11. There is, generally speaking, a privy on each lot; size of lots is sixty-six feet front and run one hundred and thirty-two feet back.
12. Was good.
13. Was not.
14. But little; two families, I think.
15. Filtered after storing.
16. Of brick or stone, and then cemented.
17. Have not.

Disposal of Sewage.

8. The majority of families have them.
9. Four by six feet; depth, six feet.
10. They are not.
11. They are not.
12. None.
13. Garbage usually goes to the sty.

MT. LIBERTY—POPULATION 200.

REPLIES BY B. F. HUMBERT, M. D.

Water Supply.

6. Use nothing but well water.
7. Principally dug wells; some drove wells.
8. Ten to twenty feet.
10. Clay and gravel.
11. Not to any extent worth mentioning.
12. The majority failed.
13. No.
14. None that I know of.
17. Not in our village.

Disposal of Sewage.

12. Used solely.
13. Like in all villages, thrown on the surface of ground, or thrown to the pigs.

MARTINSBURG—POPULATION 300.

REPLIES BY N. S. TOLAND, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. General.
7. Drilled and dug.
8. Forty to one hundred feet.
10. First ten feet shale rock, then sandstone.
11. To no great extent; care generally used to prevent contamination.
12. Dug wells quite low; drilled furnished a good supply.
13. None.
14. Not largely.
16. By cement, applied to earth, without previous walling; a few contain filters.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

KNOX COUNTY—Continued.

17. No.
18. Health of place good; few cases diphtheritic sore throat, cholera infantum, diarrhœa, etc.

Disposal of Sewage.

1. None.
8. General.
9. Three to five feet.
10. No.
11. No.
13. Conveyed to fields and used as fertilizers.

Our village is situated on an elevated portion of ground so as to favor drainage in every direction. Great care is exercised in cleaning alleys, manure heaps and all refuse, so as to prevent their injurious effects.

LAKE COUNTY.

MADISON—Population 1,000.

REPLIES BY A. H. STOCKHAM, M. D.

Water Supply.

1. Wells.
2. None in use or contemplated.
6. Entirely, except from cisterns.
7. Dug, and stoned or brick.
8. Ten to thirty feet.
9. No artesian wells.
10. Gravel.
11. In most instances contamination is impossible.
12. About fifty per cent. would not yield more than two or three pails full daily.
13. No.
14. Scarcely at all.
15. Not usually filtered before storing.
16. Cement-lined and under ground.
17. No.

Disposal of Sewage.

1. None.
8. In a large proportion of cases.
9. Average about four by six feet, and four feet deep.
10. No.
11. Not regulated.
12. Only now and then one.
13. Used as a manure.

Our locality is second to none on earth in point of general health, with perhaps the exception of pulmonary diseases.

PAINESVILLE—Population, 4,700.

REPLIES BY CHAS. M. HAWLEY, M.D.

Water Supply.

1. Mainly from wells, supplemented by creek supply, obtained from springs and surface drainage.
2. A system of water works is in use.
3. (*a*) Kellog Creek, a branch of the Grand River. (*b*) Kellog Creek, about ten miles long, has a very rapid fall, and can supply on an average every twenty-four hours 1,500,000 gallons. (*c*) Usually very fair, but occasionally in drouths anything but desirable.
4. The water works station is about one mile south of town. The stand-pipe is located on a knoll in the center of the city, and is twenty feet in diameter, seventy-six feet high and contains about 6,000 gallons. At the pumping station the water is obtained from fifteen or twenty wells, ten feet in diameter and from thirteen to eighteen feet deep; the sides of these wells are laid up in cement, the water springing up through the gravelly bottom. Near these wells, a reservoir has been constructed by excavating, plank sides, and gravel bottom, holding about a half million gallons. It is filled from Kellog Creek, one-half mile further south, and serves as a setling or subsiding basin. The only filter is at the creek station composed of stone, gravel and sand.
5. One hundred thousand gallons.
6. Very largely for domestic purposes, but about 150 families use the water works water—a mixture of well and filtered creek water.
7. A few drove wells, but mainly the ordinary stoned up wells are in use.
8. Fifteen to twenty-five feet.
10. Sandy, gravelly soil.
11. There is great liability.
12. A considerable proportion were dry.
13. No.
14. Very rarely used.
15. Yes; before.
16. Sides built up with brick and cemented.
17. Very few cases can be attributed to that cause.

Disposal of Sewage.

1. Only the business portion of the city is supplied with a sewer, main pipe and two laterals, each about five hundred feet long, making in all about fifteen hundred feet of sewer.
2. The stores are usually supplied with sewer connections, but as far as known only one residence. Efforts are being made to secure a suitable system of sewerage.
4. About eighteen inches.
5. About fourteen inches.
6. Into Grand river.
7. No.
8. Very generally.
9. Three by five feet, and six feet deep.
10. No.
11. No.
12. Rarely used.
13. Into cess-pools or spread upon the surface of the ground.

WEST MENTOR—Population, 1,000.

REPLIES BY L. H. LUSE, M.D.

Water Supply.

1. Wells and cisterns.
2. No.
6. For family use and for stock.
7. Dug and stoned up; also a great many have drove wells.
8. Eighteen to thirty-five feet.
9. None.
10. Sandy and loamy.
11. None.
12. Good; do not hear any complaint.
13. No.
17. No.

LAWRENCE COUNTY.

BURLINGTON—POPULATION, 212.

REPLIES BY F. H. WILLIAMS, M.D.

Water Supply.

1. From cisterns; a few wells in the vicinity.
2. No, and none in contemplation.
6 To but a slight extent, there being several on farms near here.
7. Just a shaft sunk until water is reached, and walled with stone.
8. Twenty to forty feet.
9. No artesian wells in this section.
10. In some localities sandy; in some clay.
11. None with which I am acquainted are liable to such contamination.
12. Some became entirely dry, and with but few exceptions the water supply in all was greatly diminished.
13. No.
14. Altogether in this village.
15. In a few cases filtered before storing.
16. Usually dug in the ground, cemented, arched over with brick, and supplied with some form of pump.
17. Have not been able to trace any case of sickness to impure water supply, although watching closely for such causes.

Disposal of Sewage.

1. This being merely a country village there is no system of sewerage used.
8. Used almost exclusively.
9. Cannot ascertain.
10. No, but sometimes boarded.
11. No.
12. Not at all.
13. By emptying into privy-vaults, and throwing onto the ground surrounding houses.

The cisterns in this village are generally in good condition, and we have less of typhoid fever than many of our neighboring villages less favorably situated.

ROCK CAMP—POPULATION 100.

REPLIES BY M. E. RANNY, M.D.

Water Supply.

1. Our village is supplied principally from wells.
2. None.
6. Altogether on the creek; springs on the hills.
7. Dug by hand with iron piping and pump.
8. Eighteen feet.
11. Not liable as a rule.
12. They were bad, some of them could not be used.
13. Malarial fever prevailed at that time complicated with typhoid fever.
14. Hardly any.
17. I have.
18. Typhoid fever.

Disgosal of Sewage.

8. Altogether.
9. Three feet wide by two feet deep.
10. No.
11. No.
12. None.
13. Usually thrown at the back door.

LICKING COUNTY.

ALEXANDRIA—POPULATION 300.

REPLIES BY D. WILLIAMS, M. D.

Water Supply.

1. Wells.
2. No.
6. All use it.
7. Dug and driven.
8. From fifteen to forty feet.
9. Do not know.
10. Gravel and sand underlying a loam.
11. Have known of no case of contamination of wells from above causes in this village.
12. Plenty of water.
13. No.
14. None.
17. No.

Disposal of Sewage.

8. Universally.
9. About four feet.
10. No.
11. No.
12. None.
13. When the vault is full it is generally covered with lime and soil, and the privy placed over another vault.

Garbage is generally carried away with stable manure. Slops are either thrown out promiscuously, or fed to hogs, or emptied into the privy vault.

GRANVILLE—POPULATION 1,500.

REPLIES BY C. W. BLACK, PREST. OF TRUSTEES OF WATER WORKS.

Water Supply.

1. Wells, springs and water-works; three wells—six-inch iron pipe driven in gravel, forty-five to sixty feet deep.
2. In use, built 1885.
3. (*b*) The surface of ground at water works is lower than bottom of wells—sixty feet deep—in the residence part of village.
4. (*a*) All in town. (*b*) Wooden tank, similar to railway water tank; capacity, 95,000 gallons. (*c*) None.
5. Probably about 5,000 gallons.
6. Two-thirds of town.
7. Dug.
8. Fifty to sixty feet.
9. None found.
10. Clay and gravel.
11. Should think quite liable from nature of gravel bed.
12. Generally low, some altogether dry.
13. No.
14. Limited.
15. Theoretically yes, as stored.
16. Division wall, brick filter; sometimes hollow wall filled with charcoal.
17. No.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

LICKING COUNTY—Continued.

Disposal of Sewage.

1. None.
2. None.
4. Twenty-four and thirty inches; these merely drain surface water.
6. Into Spring Run and Raccoon Creek.
7. No.
8. Universal.
9. Three by six, and from two to fifteen feet deep.
10. No.
11. No.
12. Very limited.
13. Leave it in vault to filter through gravel.

NEWARK—POPULATION, 12,000.

REPLIES BY B. F. SPENCER, M. D.

Water Supply.

1. Water-works and wells.
2. Yes; reservoir.
3. No; from wells. (*c*) first class; none better.
4. (*a*) two miles north of city. (*b*) 3,500,000; dug out and puddled. (*c*) None; not necessary.
5. Five hundred thousand gallons per day, possibly.
6. Considerable.
7. Both driven and dug.
8. Fifteen to forty feet.
10. Gravelly in driven wells, clay in dug.
11. Very little.
12. Some of them were dry.
13. Not any.
14. Very small.
15. No.
16. Brick and plastered; hydraulic cement.
17. None.

Disposal of Sewage.

1. Two miles and upward.
2. Not many; sewers just put in.
4. Four feet.
5. Three feet.
6. Running streams.
7. Has not.
8. Very large.
9. Size, four to six feet; depth, six to twelve feet.
10. No.
11. Yes; whenever they become nuisances.
12. Very little.
13. Carting away.

UTICA—POPULATION 1,200.

REPLIES BY G. W. GARRISON, M. D.

Water Supply.

2. No water works; none in contemplation.
3. (*a*) All water supplies are from wells drilled or walled with stone, ranging in depth from eleven to sixty feet, with abundance of water at a depth of twenty-five feet; flow, never-failing. (*c*) Hard.
6. Universally.
7. Walled wells, drilled and bored.
8. From eleven to twenty-five feet, and as deep as sixty feet.
9. At about 120 to 200 feet; never been analyzed; one or two miles north of town, 110 feet deep, with constant stream, one and a half inches thick.
10. Black, loamy land, with some sand and clay sub-soil.
11. I should judge there is no danger of contamination from privy vaults; sometimes surface water may flow into them at the curb.
12. Generally pure and clear, with but one or two exceptions, and in these the water was riley; the shallow wells of less than eighteen feet depth all failed during the dry season.
13. No.
14. None used to my knowledge.
17. No.
18. We have as pure water, and in as great abundance as any village or community in Ohio; and for this reason we have the healthiest inhabitants.

Disposal of Sewage.

1. Three or four miles of tiling to carry off surplus water.
2. Perhaps one hundred.
4. Drain twelve inches in diameter.
5. About eight inches, with four inches for house connections.
6. Into Licking Creek.
7. No.
8. All over the village; at private residences and stores.
9. Generally have drawers, and these are removed and emptied when filled, and buried above the clay and below the soil.
10. A few are.
11. Left with property owners, but if they become filthy the health officer orders them attended to.
12. None in use.
13. Cast out upon the back ground of each dwelling lot or premises.

In our village, of about 1,200 inhabitants, we construct our wells and cisterns on higher grounds than the rear part of the lots, so that no filth will percolate into them; but in the lower part of our town some wells are liable to have water run into them during a flood from the surface.

LOGAN COUNTY.

BELLEFONTAINE—POPULATION 5,000.

REPLIES BY W. H. CRETCHER, M. D.

Water Supply.

1. Wells.
2. Have one, but it is a failure.
3. (*a*) Stream too insignificant to possess a name. (*b*) Size, extremely minimum. When it rains considerable current; when it does not rain for a time, there is neither water nor current. (*c*) Surface. (*d*) Being on no important stream, the terms above and below does not apply to us.
4. (*a*) The dam is 175 feet above the town, about one mile distant. (*b*) A dam built across a gulch; do not know the capacity. (*c*) No.
5. Could not get any for six months last year.
6. Exclusively for domestic purposes.
7. Dug and driven.
8. Eighteen to thirty feet.
9. One hundred and forty-eight feet; it has not yet been analyzed; 1,200,000 gallon every twenty-four hours.
10. Loam and gravel.
11. To the same extent they are in any town seventy years old.
12. The water was lower in them than was ever known before.
13. No
14. None.
17. Not positively.

Disposal of Sewage.

1. None.
8. Exclusively.
9. Three by four feet; five to seven feet deep.

LOGAN COUNTY—Continued.

10. No.
11. No.
12. None.
13. Thrown where convenient and permitted.

We expect to supply our water works during the coming season with good, pure water from artesian wells.

HEBRON—POPULATION 600.

REPLIES BY L. W. LECRONE, M. D.

Water Supply.

1. Wells.
6. For drinking and cooking.
7. Dug and drove.
8. Twenty feet.
10. Black loam.
11. Very small.
12. Empty.
13. No.
14. None.

Disposal of Sewage.

1. None.
2. None.

RUSHSYLVANIA—POPULATION 445.

REPLIES BY JOHN WALLACE, M. D.

Water Supply.

1. Dug wells.
2. No.
6. For drinking water about two-thirds of the inhabitants use it.
7. Dug.
8. Twenty-five feet.
9. They have none in the village, but have a mile distant.
10. Clay.
11. To a considerable extent.
12. Low or dry.
13. Typhoid fever; more cases than usual.
14. By one-third of the inhabitants (estimate.)
15. Not generally.
16. Brick wall and water lime cement.
17. Yes.
18. Only typhoid, I think, and not of great amount.

Disposal of Sewage.

1. None.
8. Used by all the natives.
9. Three by two feet, and seven feet deep.
10. Never.
11. No.
12. None.
13. In back yard.

The gutters from most parts of the village empty into a small, filthy pond inside the narrow corporation lines. The location of the town is high; health good.

LORAIN COUNTY.

AVON—POPULATION 300.

REPLIES BY E. L. HANNUM, M.D.

Water Supply.

1. Ordinary wells and cisterns with an occasional spring.
2. None in use or contemplated.
6. Probably eighty per cent.
7. Excavated, then walled up with rough stone.
8. Ten to fifteen feet.
10. Mostly in gravel; some in clay.
11. But few liable from these causes.
12. All lower than ever before, and many failed entirely; no especial change in quality of the water.
13. None whatever.
14. Fifteen per cent., I should estimate.
15. Probably less than half; before, generally.
16. Of soft brick covered with coats of water lime; some divided by brick wall in center, water filters through this.
17. Not within a year, I think.

Disposal of Sewage.

1. None.
8. Scarcely at all.
9. Do not know.
11. No.
12. A very few.
13. Being a country village there is no especial method; throwing upon manure heap of barn is common.

Surface water in low or marshy localities; wells in cellars.

GRAFTON—POPULATION 1,000.

REPLIES BY C. J. WOLCOTT, M.D.

Water Supply.

1. Wells and cisterns.
2. No.
3. Almost entirely for drinking and cooking.
7. Ordinary dug wells.
8. Twelve to thirty feet.
9. Do not know.
10. Clay.
11. Privy-vaults from thirty to one hundred feet from wells in most cases.
12. Most wells were very low.
13. Twenty cases of typhoid fever in town of 600 inhabitants.
14. Very little.
15. No; neither.
16. Brick, plastered or pine tubs.
17. Most of the typhoid fever.

Disposal of Sewage.

1. None.
8. Entirely.
9. Seldom over two feet deep and two by six feet.
10. No.
11. No.
12. Not at all.
13. Thrown into back yards on ground or privy-vault.

Nothing further seems necessary to understand the cause of sickness.

NORTH AMHERST—POPULATION 1,600.

REPLIES BY E. C. SCHULER, CLERK B. OF H.

Water Supply.

1. Springs and wells.
2. No.
6. All well water used in our town.
7. Common wells.
8. From six to twenty feet.
9. No artesian wells.
10. Sand and clay.
11. Not any.
12. Most of them dry.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

LORAIN COUNTY—Continued.

13. No; we have one spring of good water that will supply the place.
14. None.
16. Wood.
17. No.
18. None that could be laid to impure water.

Disposal of Sewage.

1. None.
8. Very few.
9. Five to six feet.
10. No.
11. Yes.
12. About half.
13. To manure piles and plowed under.

OBERLIN—POPULATION 4,000.

REPLIES BY JULIA C. JUMP, M. D.

Water Supply.

1. Water is supplied by a river, wells and cisterns.

2. A system of water-works is just completed.

3. (*a*) Water is taken from the east branch of Vermillion River. (*b*) The maximum size unknown; minimum size 100,000 gallons in twenty-four hours; the fall is five feet in 1,600. (*c*) The water is good; hardness, 16.1 grains of lime to the gallon. (*d*) There is no town above us; the springs which feed the river are from one to one and one-half mile above our intake; Kipton is about one mile below; the drainage area above our intake is ten square miles.

4. (*a*) The point where we tap the river is ten miles distant. (*b*) The town is supplied directly from a well at the pumping station; a reservoir is in use as a reserve in case of fires. (*c*) The water is filtered through sand and broken stone.

5. Sixty thousand gallons are now running per day, with a capacity of 325,000 gallons.

6. Probably half the people use well water.

7. The wells have been dug or bored.

8. Their usual depth is from twenty to thirty feet.

9. No artesian wells have been obtained; several deep wells have been bored, some going down eight hundred and nine hundred feet without finding water.

10. The surface is heavy clay, with shale below.

11. The water is contaminated by proximity to privy vaults and cess-pools, so that it is utterly unfit to drink.

12. Most of the wells were low during the past summer, and many of them dry.

13. There was more typhoid and remittent fever than usual; there were also some cases of intermittent fever and dysentery.

14. About one-half of the people use cistern water.

15. It is generally filtered, about as many filtering before as after storing.

16. The cisterns are built of brick, laid up in water-lime cement, and then plastered inside with the same cement.

17. We have had sickness due to use of impure water.

18. Typhoid fever, intermittent and remittent fever, and a few cases of dysentery were due to impure water; we had little sickness compared with other towns.

Disposal of Sewage.

1. About one-half of a mile.

2. No ordinary dwelling houses are connected, but stores and one hotel and some halls.

3. Our sewers are not ventilated.

4. The main sewer is two feet in diameter.

5. The latterals are six inches in diameter.

6. The sewers discharge into Plumb Creek, the one small stream flowing through town.

7. The water of the creek is polluted, but it is not used until it gets beyond the city limits.

8. No proper privy vaults are in use. or at most not more than two or three; a shallow surface excavation is generally used.

9. They are very shallow, not exceeding four or five feet.

10. These excavations are not cemented.

11. There is no ordinance or rule of the Board of Health regulating their construction or emptying.

12. Very few dry earth closets are used—not one in a hundred.

13. Ninety-nine one-hundredths of the night-soil is buried within ten feet of the privy vault; kitchen garbage is collected and fed to swine; house slops are usually thrown broad-cast over the surface.

Our one stream, Plumb Creek, usually goes dry in summer, and all the filth carried in by the sewers remains, but now the waste-water from the water-works will keep it running.

I wish to acknowledge my indebtedness to the following gentlemen for assistance: Judge Steele, chairman of the water-works committee; C. W. Paine, engineer water-works; F. F. Jewett, Prof. of chemistry, Oberlin College, and Thos. Mayhew, health officer.

Analysis of water used by the town of Oberlin, O., September, 1885.—*Grains to the gallon.*

Organic matter	.0415
Silica	.3500
Iron oxide and alumina	.2940
Magnesic carbonate	11.9488
Calcic carbonate	1.1620
Calcic sulphate	14.7541
Sodic sulphate	3.4400
Sodic chloride	2.9660
Potassic sulphate	.3965
Total	35.3529

Hardness, 16.1 grains of lime to the gallon.
Free ammonia, .04 parts to the million.
Albuminoid ammonia, .044 parts to the million.
Chlorine, 1.5 grains to the gallon.
Residue, 35.3529.

WELLINGTON—POPULATION 3,000.

REPLIES BY E. R. HOLIDAY, M. D.

Water Supply.

1. Wells and cisterns.

2. No; none contemplated in the near future.

6. Should judge less than cisterns, though there are many wells.

7. Stoned or bricked up; in some instances rain water is carried into wells by the eve-pipes.

8. Fifteen to forty feet.

9. There are none here; drilling for natural gas has been carried to a depth of about one thousand feet.

10. Yellow clay; below this, sand, then blue clay.

11. Such as in village of 3,000 would be, with out-door privies of all sorts, and very poor sewering and underdraining.

12. Usually very low; some wells held out, others gave out early in the season.

13. None, so far as known or surmised; it has been quite healthy here since the early spring months, when measles prevailed extensively.

LORAIN COUNTY—Continued.

14. To a considerable extent.
15. Much of it is filtered before, some after storing.
16. The ground cisterns are brick or stone, cemented, the former probably prevailing; then there may be a few wooden.
17. Not this season.

Disposal of Sewage.

1. There is very little, in the shape of box sewers.
8. Not allowed; usually boxes.
11. There is much laxity regarding filth in this village, yet about residences generally an effort is made to keep clean.
12. Pretty generally.
13. Hauled away by farmers; placed on gardens, or buried there.

The village has no sewerage system; there are a few box drains in the business part of town to carry away the water from house-roofs. No house connections are allowed. The dry-earth closets use dust, ashes, lime, etc.

LUCAS COUNTY.

TOLEDO—POPULATION 80,000.

REPLIES BY G. A. COLLAMORE, M. D., H. O.

Water Supply.

1. Water-works.
2. In use since 1876.
3. (*a*) Maumee River. (*b*) One-fourth mile wide; very little change, except spring floods; ordinary current, 3 to 4 miles; in floods, 4 to 6 miles; (*c*) Mostly pure; small proportion mineral matter. (*d*) Perrysburgh, eight miles above; Maumee, nine miles above; none below.
4. (*a*] Upper, or south part of city. (*b*) No. (*c*) No.
5. In 1886 115,532,949 gallons.
6. Probably by one-half to two-thirds of population.
7. Artesian and surface.
8. Surface, 18 to 30 feet.
9. 80 to 120 feet; about as soft as river water; supply unlimited; does not now flow of itself.
10. Clay, blue.
11. Quite an extent—impossible to say exactly.
12. Empty surface wells—artesian all right.
13. Should judge not. We have so many sources of water supply that no disease has yet been caused by any want of it.
14. A moderate extent.
15. Yes, after storing.
16. Mostly of wood; some of brick.
17. No.

Disposal of Sewage.

1. About 45 miles.
2. About 1,500.
3. Rarely and slightly by man-holes.
4. Five and six feet.
5. Two feet.
6. Into Maumee River and its tributaries.
7. Only occasionally.
8. Very largely.
9. Ordinance requires 10 feet, but few are; all sizes.
10. No.
11. It is.
12. Don't know of any.
13. Removing from city; garbage fed to swine; night-soil buried.

The river will, in time, become polluted by the towns above, especially as there appears to be a rapid growth of them in prospect through the use of natural gas.

WEST TOLEDO—POPULATION 500.

REPLIES BY WM. WATTS, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. Surface wells and artesian wells.
8. Surface, 12 feet.
9. 68 feet sulphur; rises to within 10 feet of surface.
10. Sandy, blue clay subsoil.
11. Some places very liable; other places not so much so.
12. Surface wells, dry; artesian wells, no change.
13. Two cases of typhoid, probably due to that condition.
14. Very little, if any.
16. Of wood.
17. Not during past season.

Disposal of Sewage.

1. None.

MADISON COUNTY.

LONDON—POPULATION 4,000.

REPLIES BY H. J. SHARP, M. D.

Water Supply.

1. Wells.
2. No.
6 Entirely.
7. Open and driven.
8. Mostly 12 to 20; some 40 to 60 feet.
9. 250 feet; almost soft; lime predominates; flow not determined, but probably 500,000 gallons in 24 hours.
10. Clay, with gravel water-bed.
11. To a large extent.
12. The shallower wells dry, or nearly so; deeper, good supply.
13. A large amount of continued fevers and diarrhœal affection, undoubtedly due to bad water.
14. Very little.
17. Yes.
18. Continued fevers and diarrhœal affections prevail during drouth among those using well water, and chemical examination of water shows it bad.

Disposal of Sewage.

1. No sewers.
8. Nearly extinct.
11. An ordinance and orders of board of health.
12, None according to improved system, but many in general way.
13. Night-soil carted out of corporation; garbage to some extent also; slops thrown upon the ground.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MADISON COUNTY—Continued.

PLAIN CITY—Population 1,500.

REPLIES BY F. N. MATTOON, M. D.

Water Supply.

1. Wells and cisterns.
6. Almost exclusively for drinking and culinary purposes.
7. Open surface wells.
8. From ten to thirty-five feet.
10. Loamy, with a limestone, gravel subsoil; alluvial.
11. There are very few privy vaults in the town, though many privies without vaults; cessspools none.
12. The water in them became very low, and some failed entirely.
13. Diarrhœal troubles largely prevailed.
14. Not any that I know of.

Disposal of Sewage.

1. About three-fourths of a mile, with a large amount of tile ditching.
3. Not ventilated except in one place by a silt basin, where a small sewer empties into a large one.
4. Twenty-four inches in diameter.
5. No laterals, except tile ditches.
6. One twenty-four inch empties near the center of the town into Sweny Run, which passes through the town. One ten-inch starts near the center of town, and discharges into Darby Creek, east of town.
7. No; they were all newly constructed this season.
8. Only a very few in use.
9. Don't know.
10. No; only an excavation in the ground.
11. Think not.
12. Only one in the town.
13. Usually thrown on the top of the ground, a short distance from back doors, or into the privies, and some into tile ditch, drops, or sinks.

RANGE—Population 200.

REPLIES BY C. M. DEEM, M.D.

Water Supply.

1. Wells.
2. No; none contemplated.
6. Almost wholly.
7. Dug; walled with brick or tile.
8. From twelve to twenty feet.
9. None in the neighborhood.
10. Black loam, mostly.
11. All wells in town have privies within from twenty to one hundred feet of them.
12. All low, and some entirely dry.
13. No; but for five or six years previous we have had considerable typhoid fever, beginning during the dry time, or at the first rise of water.
14. One family uses it.
15. No.
16. Dug in the ground, walled with brick and cemented.
17. Yes; in one family in country.
18. Three cases of diphtheria, and two of malarial fever.

Disposal of Sewage.

1. None.
8. Most privies are on top of ground; a few have small holes dug in ground.
9. About two by three and two feet deep.
10. No.
11. No.
12. None.
13. Thrown out the back door.

Some wells here have not been cleaned out for over twenty years.

SEDALIA.

REPLIES BY AMBROSE OGAN, M.D.

Water Supply.

1. Wells.
2. No.
6. Exclusively.
7. Dug and walled with brick.
8. Eighteen to fifty feet.
10. Clay, sand and gravel.
11. There is usually a privy on same lot with well.
12. Very low; the shallow ones were dry.
13. No; not one case of fever in the village during the summer; very little diarrhœal trouble.
14. None.
17. None.

Disposal of Sewage.

1. None.
8. Exclusively.
9. Four or five feet.
10. No.
11. No.
12. None.
13. Emptied on manure piles and in the alleys.

SOUTH SALEM—Population 400.

REPLIES BY O. G. FIELD, M.D.

Water Supply.

1. Wells.
2. None in use; none contemplated.
6. Exclusively.
7. Dug wells.
8. About twenty-five feet.
10. Alluvial.
11. About ninety per cent.
12. Exhausted, or nearly so.
13. There was not.
14. Not used.
17. I have.
18. Remittent and intermittent fevers of mild character.

Disposal of Sewage.

8. Scarcely any.
9. From surface to two or three feet.
10. No.
11. No.
12. None at all.
13. These find a lodgment in the alleys and streets.

The water, at times, is contaminated with surface water, freighted with its usual noxious materials.

WEST JEFFERSON—Population 1,100.

REPLIES BY JOHN N. BEACH, M. D.

Water Supply.

1. Wells, exclusively.
2. No.
7. Walled, generally, with a small proportion of drove.

MADISON COUNTY—Continued.

8. Twelve to twenty-five feet.
9. No knowledge.
10. Mold, gravel and clay.
11. To a great extent in the village; less so in the country from privies. In the country the danger is greater from cess-pools generally formed near the wells.
12. Water extremely low and frequently offensive. Where wells were examined accumulations of filth were invariably found.
13. Tpyhoid fever unusually prevalent and apparently due to the foul condition of drinking water in many cases.
14. None used.
17. Yes.
18. I believe the typhoid fever here was attributable to the impure water of the wells; twenty-two cases in this vicinity.

Disposal of Sewage.

8. Generally in the village, and a portion of country; tenants on farms do not use them, and it is in such places most of our fever cases have appeared.
9. Four by six feet, and five feet in depth.
10. No.
11. No.
12. None.
13. Generally thrown out at most convenient point.

The pollution of wells has in no instance seemed from privy vaults, but rather from the presence of foul pools near the wells, and possibly surface drainage from deposits of excreta near them, where there were no privies, as is often the case among the poorer class of farmers.

MAHONING COUNTY.

BRIAR HILL—POPULATION 1,000.

REPLIES BY J. B. KOTHEIMER, M. D.

Water Supply.

1. Wells.
2. There is none in use or contemplated.
6. Nothing but well water used.
7. Dug wells.
8. Twenty to thirty feet.
9. Artesian water is found at the depth of fifteen to twenty feet; calc. sulph. and carb. magn. sulph., and trace of iron.
10. Clay, gravel and rock.
11. Perhaps one-third of the number of wells are too near the privy vaults, etc.
12. Most of the wells were in good condition.
13. No.
14. Very seldom used for drinking water.
16. Cemented.
17. Some cases of typhoid fever.

Disposal of Sewage.

1. None.
8. Perhaps not in one-half dozen places.
9. Four feet.
10. Yes.
11. No.
12. Mostly.
13. Kitchen garbage and house slops fed to animals; night-soil, etc., thrown into closets and yards.

DAMASCUS—POPULATION 250.

REPLIES BY A. M. AILES, M. D.

Water Supply.

1. Wells and cisterns.
2. None, and none contemplated.
6. For drinking and cooking purposes, and watering stock.
7. Some are dug; others bored and piped.
8. Dug wells, thirty-five feet; bored, seventy-five to two hundred and fifty feet.
10. Usually gravel for a short depth, then blue clay for a depth of ten feet, then gravel.
11. People here are usually careful to have the ground slope every way from the well; care is taken as to contamination; don't have privies near them.
12. A great many of them ceased to afford water; those that held out were pure and wholesome; where the water was low, people took care to boil it before using.
13. There was no typhoid fever, nor any other disease that would be produced by impure water.
14. So far as I can learn, cistern water is not used for drinking or cooking purposes.
17. None.

Disposal of Sewage.

Vaults are not in use; they are of the dry dirt variety; usually great care taken to keep them from becoming unclean. People here are very careful to keep their surroundings in a healthful condition. I have been here three years. There has not been a case of typhoid fever in town during this time.

ELLSWORTH—POPULATION 238.

REPLIES BY G. W. BROOKS, M. D.

Water Supply.

1. Wells; some of them drilled and piped to the rock.
6. Universally.
7. The ordinary well, drilled to the rock with pipe, iron or galvanized,
8. About thirty feet, common wells; drilled, eighty feet.
9. None in this township.
10. This is an ordinary clay soil, limestone being found in abundance along streams.

There are very few privy vaults in the village. Night soil is usually mixed with ashes or road dust, and, after being deodorized, is used as fertilizer for farm or garden.

12. The more shallow ones failed; generally there was an abundance of good water.
13. No; I have been here thirty-five years, and the past season has been the healthiest that I ever experienced.
14. Not at all.

Disposal of Sewage.

13. Night soil is disposed of as above described; kitchen garbage and slops are fed to pigs, chickens, etc., as all our people here have more or less land, and keep domestic animals.

GREENFORD—POPULATION 300.

REPLIES BY A. W. SCHILLER, M. D.

Water Supply.

1. Wells.
2. None in use, and none contemplated.
6. Exclusively.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MAHONING COUNTY—Continued.

7. Surface wells.
8. From ten to sixty feet.
9. Don't know.
10. Water is found in the first strata of rock, at a depth varying from ten to sixty feet.
11. Not liable to contamination.
12. Many were dry, and the remainder low.
13. Dysentery was prevalent to a great extent, due in part probably to the condition of the drinking water.
14. None used.

Disposal of Sewage.

8. Used exclusively.
9. Four feet wide, six feet long, and five feet deep.
10. No.
11. No.
13. As the location is high, we have excellent surface drainage.

HASELTON—Population 2,000.

Replies by J. J. Louis, M. D.

Water Supply.

1. Wells.
6. Almost exclusively.
7. Dug and stoned.
8. From twenty to forty feet.
9. Sixty to eighty feet; never knew any to be analyzed; a copious flow.
10. The surface, clay and loam; the bottom of wells are some in sand and gravel and some in rock.
11. Some very much so.
12. Very low.
13. No.
14. Not at all.
17. Have not.

Disposal of Sewage.

8. Almost entirely.
9. Size four by six feet; depth from surface five feet.
10. No.
11. No.
12. Not at all.
13. Thrown out at the back door or in privy vaults.

NEW SPRINGFIELD—Population 300.

Replies by W. C. Stafford, M. D.

Water Supply.

1. Ordinary wells, from ten to thirty feet in depth.
2. There is none in use and none contemplated.
6. Altogether.
7. Wells walled with stone, a few with tiling.
8. Average fifteen feet.
9. We have none.
10. Water is found in rock, quick sand and gravel.
11. I know of no well in our town but is four times its depth from any privy.
12. Beyond the scarcity in the supply, in a few wells, there was nothing noticed.
13. There was not.
14. None at all.
17. I have.
18. Typhoid fever; ten cases in one family (every member) and all attendants except myself; I drank none of the water.

Disposal of Sewage.

8. Every family has a privy; distance from place of dwelling one hundred and fifty feet to one hundred and sixty feet.
9. There are very few, if any, vaults; privies, or rather their contents, are thrown on manure piles every few weeks.
11. No.
13. Night-soil is carried to the manure pile; the others fed to hogs, etc.

NORTH LIMA—Population 300.

Replies by S. Schiller, M. D.

Water Supply.

1. Wells.
2. No water works.
7. Ordinary wells, curbed with stone.
8. Twelve to thirty feet.
10. Gravel.
11. Great care is exercised in this particular.
12. Low.
13. Dysentery seemed to be epidemic in September and October; it was, however, a mild form in most cases.
14. Not at all.
17. No.

Disposal of Sewage.

1. No sewers.
8. Universally.
10. No.
11. No.
12. Not used.

POLAND—Population 1,400.

Replies by C. R. Justice, M.D.

Water Supply.

1. Wells.
2. No.
8. About eighteen feet.
10. Clay.
11. To a very limited extent.
12. The water generally was good, the only difficulty being scarcity.
13. We are blessed with good water, and very little trouble arises from it.
14. Not at all.

Disposal of Sewage.

8. They are used generally.
9. From six to eight feet in depth by four to eight feet in width.
10. No.
11. No.
12. None.
13. Night-soil is usually buried on the lot; house-slops are usually carried off in drains.

We are usually a healthy town, being located high and dry, with good natural drainage and good well water.

YOUNGSTOWN—Population 24,000.

Replies by John M'Curdy, M.D.

Water Supply.

1. River and well water.
2. Yes; the Holly system.
3. (*a*) Mahoning river. (*b*) Medium size; large supply of water. (*c*) Fairly good; during floods a good deal of surface mesh.
4. (*a*) On west edge of corporation one and a half miles from center. (*b*) Settling chambers or cisterns are used. (*c*) Nothing but the settling chambers.
5. One million and five hundred thousand gallons.
6. There are about one thousand six hundred wells used.
7. Generally circular wells, walled with stone.
8. From fourteen to sixty feet.
9. Never drove an artesian well.
10. In the valley, sand and gravel; upon the hills yellow and blue clay.

MAHONING COUNTY—Continued.

11. Very great; in my opinion not fifty wells in the city were entirely free from contamination of privy contents.
12. Very low; many of them—say 1,200—had scarcely any water.
13. I cannot say positively that there was.
14. Not to any great extent.
15. Yes; generally filtered.
16. Cemented upon the sides, and brick used for filter.
17. Yes; I have so diagnosed cases.
18. Some forms of fever, diphtheria and cerebro-spinal meningitis. The three above types constitute about twenty-five per cent.

Disposal of Sewage.

1. A little more than ten miles.
2. From five hundred and fifty to six hundred.
3. With catch-basins on sides of street and circular pipe in center of street, six inches and from one hundred to four hundred feet apart.
4. From seven feet to five and a half feet, and eight thousand feet in length.
5. From twelve to thirty-six inches in diameter.
6. Into Mahoning river.
8. Nearly one thousand and six hundred.
9. About four feet by six.
10. Only about five hundred are.
11. Rules of board of health.
12. Rather above five hundred in number.
13. Some is mixed with earth and shipped; some hauled out and used for fertilizer.

We are troubled with the filth washed in from towns above, and no way of stopping it; as Briar Hill and Girard.

MARION COUNTY.

GREEN CAMP—POPULATION 312.

REPLIES BY J. T. MARTIN, M.D.

Water Supply.

1. From wells, and we can also have resource to the Scioto rivers (Little and Big).
2. No.
3. (*b*) Green Camp lies between Little and Big Scioto; Big Scioto is clear of obstruction at this place; Little Scioto is crooked, sluggish and obstructed. (*c*) Not good in the river; well water is usually fairly good.
6. For all household purposes entirely used.
7. Mostly open dug wells; some driven.
8. From twelve to sixty feet.
9. No flowing wells.
10. First soil, hard pan, gravel, quick sand.
11. In my opinion, we are in much danger on this account; however, have not seen many bad results yet.
12. Low, and some failed entirely.
13. Not in this locality.
14. Very little so used.
17. I think I have.
18. We usually call it malaria.

Disposal of Sewage.

1. Our town is pretty well underdrained with tile.
6. Our tile empty into the river.
7. No.
8. Old fashioned vaults are the rule.
9. Four by five feet; from three to six feet; know of one that is eight or nine feet.
10. No.
11. No.
12. Not at all.
13. Broad-cast or into tile ditch.

Our privy vaults are usually only dug into the hard pan, which, as a rule, hold all, and which is our only safety. When dug too deep, I regard them as very dangerous, as they may tap the gravel and contaminate our water.

LA RUE——POPULATION 1,000.

REPLIES BY C. E. SAWYER, M. D.

Water Supply.

1. Dug wells.
6. General.
7. Dug and drove.
8. Nine to forty feet.
10. River bottom, land.
11. To a very considerable extent.
12. Many failed.
13. Yes, typhoid fever more general than ever before.
14. Limited.
17. I have.
18. Of 30 or 40 cases of continued fever I think that they were all due to the low and impure condition of water.

Disposal of Sewage.

8. General.
9. Three or four feet.
10. No.
11. No.
12. None.
13. Fed to swine and thrown on the ground.

Our river is polluted by the Kenton paper mill to such an extent that every summer we have to bury three or four wagon loads of fish killed by the refuse from the aforesaid mill.

MARION—POPULATION 8,000.

REPLIES BY A. RHU, M. D.

Water Supply.

1. From wells and cisterns.
2. We are now at work laying pipes for Holly water-works.
6. As a rule.
7. Ordinary dug wells, and perhaps the greater portion driven wells.
8. From 30 to 50 feet.
9. Have none here.
10. Gravel.
11. Judging from my experience as health officer of our city, fully 25 per cent. are liable to contamination from privy vaults.
12. Most of them were dry.
13. Typhoid fever and other febrile diseases, and just now we have diphtheria; in fact, we had more sickness during the past summer than we had during the past five years.
14. A goodly portion use cistern water.
15. Yes, it is generally filtered.
16. Brick and cemented, and many constructed of wood.
17. Yes; for instance, typhoid fever and enteric troubles, such as diarrhœa, etc.

Disposal of Sewage.

1. None. For the past three years I have put this matter before our people and council, and we are as far from it as ever.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MARION COUNTY—Continued.

8. As a rule.
9. From 1 to 3 feet.
10. Very few, indeed.
11. Yes, but not observed.
12. Few, indeed; less than ½ per cent.
13. Carted away; and once a year, in the spring, we order a so-called general cleaning up.

WALDO—POPULATION 248.

REPLIES BY JASPER S. MILES, M. D.

Water Supply.

1. Well water.
2. None in use; none contemplated.
6. Exclusively.
7. Dug wells.
8. From 10 to 18 feet.
9. No artesian wells.
10. Black sandy loam at surface; gravel usually at bottom of wells.
11. No liability in this vicinity.
12. Some of the wells went dry, or nearly so, but plenty in most of the wells.
13. But very little sickness of any kind; much less than usual during summer months.
14. Probably not at all for house use.
17. Have not.

Disposal of Sewage.

1. No sewerage.
8. Privy vaults exclusively.
9. 2 by 4 feet: 4 feet deep.
10. They are not.
11. Are not.
12. Not any.

MEDINA COUNTY.

HINCKLEY CENTER—POPULATION 300.

REPLIES BY G. C. EGGERT, M. D.

Water Supply.

1. Wells and springs.
2. Not any.
6. Most all.
7. The common stoned up wells.
8. From twelve to fifty feet.
9. Not any in use here.
10. Clay, gravel, and sandstone rock.
11. There is little or no contamination of that character.
12. Most of them were low; some of them were dry.
13. No unusual epidemic prevailed here, Hinckley being an unusually healthy locality on account of its rocky hills.
14. To little or no extent.
16. Of brick and cement.
17. Not any.

Disposal of Sewage.

1. Not any.
8. Most altogether.
9. Most of them are shallow, contents being carted on to the land.
10. Simply the natural surface of the soil.
11. We have no board of health here.
12. Answered above.
13. Answered above.

LITCHFIELD—POPULATION 800.

REPLIES BY A. B. EVERITT, M. D.

Water Supply.

1. Wells and cisterns.
6. Nine-tenths.
7. The ordinary dug well.
8. From sixteen to twenty feet.
9. None in town.
10. Yellow clay.
11. Three-fourths.
12. The water in them was very low; many of them dry.
13. There was none.
14. One-tenth.
15. It is not generally filtered.
16. Principally brick; a few are stoned up.
17. Have not.

Disposal of Sewage.

8. Almost exclusively.
9. Two by four feet, and from one and a half to three feet in depth.
10. Not usually.
11. They are not.
12. I know of none in use.
13. Usually by emptying them into the privy vault, out the convenient back door, or on to some compost pile.

LIVERPOOL—POPULATION 300.

REPLIES BY L. B. PARKER, M. D.

Water Supply,

1. Wells.
2. No.
3. No.
6. Universally.
7. Stoned.
8. From ten to forty feet.
10. Clay.
11. Slight.
12. Many dry, and water low in others.
13. No.
17. No.

LODI—POPULATION 800.

REPLIES BY A. E. ELLIOTT, M. D.

Water Supply.

1. Wells and cisterns; wells, mostly surface water.
2, No.
6. Nothing else.
7. Dug from twelve to twenty feet.
10. Sandy loam.
12. The majority of the wells held out, but were low.
13. No.
14. Not at all.
16. Wood and brick.
17. No.

Disposal of Sewage.

1. Not any.
11. No.
12. Don't know of any.

MEDINA—POPULATION 2,200.

REPLIES BY J. N. ROBINSON, M. D.

Water Supply.

1. Wells and cisterns, mostly.
2. Yes, for fire purposes.
5. Perhaps two hundred to five hundred barrels.
6. Three-fourths use wells.
7. Common dug and stoned as usual.

MEDINA COUNTY—Continued.

8. From fifteen to forty feet.

9. None within eight miles of our town; we have bored down 1,800 feet; got some gas and oil, but not enough for light or fuel.

10. Clay.

11. Generally carefully protected by embankments, and as far from privy vaults as possible.

12. Very low; some dry.

13. An increase of typhoid fever.

14. Perhaps one-fourth use cistern water.

15. Generally, as it runs from the house.

16 Bricked up in water-lime.

17. Some epidemics are plainly attributable to impure water.

Disposal of Sewage.

8. General; some use trays and haul off to creek or ravine.

9. From four to six feet.

10. Seldom.

11. Not unless in the opinion of the board of health they become nuisances.

12. Very seldom.

13. Hauled off, or run off through sewers.

Our council forbids the storing or handling of phosphate, slaughtering animals, and unburied carcasses in the corporation.

SPENCER—POPULATION 300.

REPLIES BY A. G. WILLEY, M. D.

Water Supply.

1. Wells and cisterns.

2. None in use; none contemplated.

6. Nearly every family has a well and cistern.

7. Stoned, drilled aud bored; find no soft water.

8. From twelve to thirty feet.

9. There are none here.

10. A stiff, blue clay; sometimes a streak of gravel and rock.

12. The last three months very low; some giving out entirely.

13. None that could be traced to a scarcity of water in wells.

14. Is used, I believe, as often as well water.

15. After.

16. With a partition through it, the water entering one side and filtering through.

17. None that I could trace to such causes.

18. We have had but very little sickness in this vicinity; none that could be traced to impure water.

Disposal of Sewage.

1. None.

8. A big vault is dug, privy set over it; when it gets filthy it is moved to another.

12. I Don't know.

13. Carrying it some distauce from the house and throwing upon the ground.

There has never been any system of sewerage, or much drainage adopted by our people in this vicinity.

WEYMOUTH—POPULATION 275.

REPLIES BY FRANK YOUNG, M. D.

Water Supply.

1. Wells.

2. No.

6. Wholly.

7. Dug, a few drilled.

8. From fifteen to thirty feet.

9. None here.

10. Quicksand and gravel; more or less blue clay.

11. Not very much, owing to the character of the land.

12. Extremely low.

13. No.

14. None.

17. No.

Disposal of Sewage.

1. We have no sewerage here.

MEIGS COUNTY.

ALFRED—POPULATION 100.

REPLIES BY M. BENTZ.

Water Supply.

1. Wells.

2. No.

8. Fifteen to fifty feet.

10. Sandy soil.

12. Good.

13. None.

14. None.

Disposal of Sewage.

10. No.

11. No.

12. None that I know of.

This is only a small village, and there is no system of sewerage.

CHESTER—POPULATION 176.

REPLIES BY E. J. COPELAND, M. D.

Water Supply.

1. From wells.

2. No.

8. From twenty to thirty-five feet.

10. Generally in clay overlying sand rock.

11. I know of no source of contamination.

12. Many of them failed.

13. No.

14. Very little.

15. I think not.

17. I have not.

LETART FALLS—POPULATION 500.

REPLIES BY W. M. HENRY, M. D.

Water Supply.

1. Cisterns.

6. There are but few wells in town, their depth, sixty to seventy feet, prevents the people from having them. Cisterns come much cheaper, and for that reason are in general use. All along the banks of the river there are nice springs of soft water; in times of drouth, the cistern supply giving out, they have to depend on the Ohio river for water for all purposes.

9. None tested.

10. Sand and gravel.

11. I do not think they are liable to any contamination.

12. Most of them dry.

13. None; most of the people carried water

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MEIGS COUNTY—Continued.

from the Ohio river during the drouth; some used it for drinking, others used from springs near the water's edge.

14. Almost entirely.
15. None of the cisterns have filters.
16. Cemented, on earth; capacity about seventy-five to one hundred barrels.
17. None.

Disposal of Sewage.

1. None.
8. On every lot that has a family living on it.
9. Four by six by ten feet.
10. Think not.
11. They are not; every person constructs to his own notion.
13. When the vaults overflow they make new ones; garbage and slops thrown in the back yard.

I think if they would have more wells the general health would be better, but as long as it requires work and the almighty dollar, things will remain as they are.

PORTLAND—POPULATION 150.

REPLIES BY J. Q. ARMITAGE, M. D.

Water Supply.

1. Cisterns.
6. Very little.
8. About forty feet.
10. Sandy.
12. Dry.
13. No.
14. Most all have them.
16. With cement.
17. No.

Portland, Ohio, is a country village of about 150 inhabitants; most families have cisterns. One well in place. No epidemic or endemic diseases been here. In the last nine years, some have used the Ohio river water.

RUTLAND—POPULATION 150.

REPLIES BY A. A. STANLEY, M. D.

Water Supply.

1. Wells.
2. No.
6. We use well water altogether.
7. Walled with stone and some cemented.
8. About ten feet.
9. None here.
10. Sandy.
11. They are about eighty to one hundred feet from the dwellings.
12. About one-third of them went dry.
13. No.
14. Not at all.
15. Before.
16. Walled with brick and cemented.
17. No.

Disposal of Sewage.

1. We have none.
8. Altogether.
9. About four feet deep and six feet wide.
10. No.
11. No.
12. None.
13. Thrown into the back yard.

MERCER COUNTY.

CHATTANOOGA—POPULATION 100.

REPLIES BY H. J. CORDIER, M. D.

Water Supply.

1. From wells.
2. No.
6. Nearly altogether.
7. From 3 to 4 feet diameter; some bored with 2 to 3 inch augers.
8. From 20 to 70 feet.
9. From 50 to 80 feet; sulphur, and I think some iron; flows from spout 1-inch stream and less.
10. Black loam on top, blue clay further down, sometimes sand and gravel.
11. Sometimes not more than one to two hundred feet apart.
12. All the best made wells had water, but many were dry.
13. An unusual form of typhoid fever or typho-malarial; something different from anything we ever had.
14. Not much.
15. Very little; what is, is filtered before storing.
16. Walled with brick and cemented, jug shaped; some sycamore gums and plank walls.
17. I think I have.
18. Nature above stated (in 13). In some families all; in others most of them; while in some families only one or two were sick.

Disposal of Sewage.

1. None.
8. Altogether in town; in country, mostly.
9. About 2 by 4 and from 2 to 6 feet deep.
10. No.
11. No.
12. None.
13. On the ground or in privy vault.

There has been, for more than a year, a disease among hogs, known as "hog cholera," which, I claim, is at least very similar to our typhoid fever.

MARIASTEIN—POPULATION 300.

REPLIES BY A. P. RENNEKER, A. M., M. D.

Water Supply.

1. Universally well water.
2. None; none contemplated.
7. The old-fashioned dug well, walled with brick or stone.
8. 20 to 40 feet.
9. 20 to 40 feet; partly lime, partly sulphurated.
10. Black loam, with sub-strata of blue clay.
11. Mostly too near to these places.
12. For the most part, bottom filled with slime and refuse matter.
13. Many cases of malarial-typhoid, and numerous cases of mild or walking typhoid.
14. Very sparingly.
15. Only in a few instances.
16. Some cemented and jug-shaped; others simply brick-walled and open-mouthed.
17. Yes.
18. Considerable typhoid, cholera morbus, acute dysentery, and various digestive troubles.

Disposal of Sewage.

1. None.
8. Sadly neglected; many farmers none at all.
9. From 1 to 6 feet.
10. Never.

MERCER COUNTY—Continued.

11. No.
12. None.
13. Fed to hogs, etc., or carried into the fields.

MENDON—POPULATION 550.

REPLIES BY G. R. HAGERMAN, M. D.

Water Supply.

1. Cisterns generally, but in dry weather mostly from wells.
2. None; none contemplated.
6. In dry weather used largely.
7. Dug and walled up with stone.
8. 30 to 50 feet.
10. Clay, then blue clay, then sand.
11. They are not in close proximity, and drain from the wells.
12. They did not fail to supply water, but were low.
13. Some typhoid fever, but not prevalent—not as much as years previous.
14. Usually at all houses having them if they have no well.
15. No.
16. Some cemented cisterns; others walled with brick.
17. No.

Disposal of Sewage.

8. Generally.
9. 4 to 5 feet deep and 3 by 4 or 5.
10. No.
11. Just as we hire it done individually.
12. None in use.
13. Out in alleys or into privy.

We have none that is traceable to foul water.

MIAMI COUNTY.

ALCONY—POPULATION 150.

REPLIES BY A. MULLENDORE, M. D.

Water Supply.

1. Entirely from wells, except one spring.
2. None in use and none needed.
7. Dug wells, walled with stone.
8. About twelve to thirty feet.
9. Do not know.
10. Clay soil.
12. Quite a number went dry, or nearly so.
13. No.
14. None used.
17. No.

Disposal of Sewage.

1. None.
13. Pitched into the back yard or over into the alley.

Our water supply is as good as can be found in any small village.

BRADFORD—POPULATION 1,500.

REPLIES BY W. H. H. MINTON, M. D.

Water Supply.

1. Common dug wells.
2. No.
6. Exclusively, by the citizens.
8. From twenty-five to forty feet.
9. None found.
10. Gravel.
11. From forty to one hundred feet.
12. Generally good.
13. No.
14. None at all.
17. No.

Disposal of Sewage.

1. None.
8. Altogether.
9. Three to seven feet.
10. No.
11. No.
12. None.
13. Principally thrown out on ground.

CASSTOWN—POPULATION 400.

REPLIES BY CHAS. A. HARTLEY, M. D.

Water Supply.

1. Wells.
2. None.
6. Entirely
7. Principally dug wells, walled with stone; some drove wells.
8. Twelve to thirty feet.
9. No means of knowing.
10. Gravel.
11. Hardly any.
12. Great many failed.
13. None.
14. None.
17. None here.

Disposal of Sewage.

1. None.
8. A majority of the privies are vaulted.
9. Four by six, four to six feet deep.
10. No; walled with stone or boards.
11. No.
12. None.
13. Thrown on manure pile, in alley or privies.

COVINGTON—POPULATION 2,000.

REPLIES BY JACOB KENDELL, M. D.

Water Supply.

1. Wells.
2. None, none contemplated.
6. Almost exclusively.
7. Wells drilled in the rock.
8. Fifteen to forty feet.
9. Never been found; never been any any effort made to go beyond the usual depth for water.
10. Mostly in limestone rock, with a few exceptions.
11. Very little liability of this kind.
12. About one-half afforded water abundantly, the other half afforded a scant supply; a few wells went entirely dry; the water, generally speaking, was pure.
13. No.
14. None.
17. Not in town.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MIAMI COUNTY—Continued.

Disposal of Sewage.

8. General.
9. Four by six, seven feet deep; walled with stone.
10. No.
11. No.
12. Very little.
13. Generally disposed of on lot; garbage, house slops, etc., fed to swine, chickens, etc.

FIDELITY—POPULATION 500.

REPLIES BY J. H. DE BRA, M. D.

Water Supply.

1. Wells, springs and cisterns.
2. None; none contemplated.
8. Fifteen feet.
9. Have none here.
10. Black soil and red clay to depth of six feet, then rock.
11. Full extent.
12. With the exception of one drilled well forty feet deep, all failed.
13 Yes; eruptive or skin disease, and dysenteric diseases prevailed to an unusual degree.
14. Rarely used at all for drinking purposes.
18. Were of violent character and an unusual amount.

Disposal of Sewage.

8. In general use.
9. Two feet wide, six feet long, and from two to four feet deep.
10. They are not.
11. It is not.
13. Recklessly scattered about on top of soil, in gardens or where most convenient to throw it.

Sources of pollution—Negligence in cleaning out wells, laying up wall in cement, and closing top or making platform sufficiently tight, and failing to drill or dig deep enough.

PIQUA—POPULATION 10,000.

REPLIES BY S. S. GRAY, M. D.

Water Supply.

1. Wells.
2. Holly water-works for fire purposes.
7. Open dug and walled with limestone.
8. From fifteen to thirty feet.
9. No artesian wells.
10. Loam, clay mixed with bowlders; gravel at fifteen feet, then gravel and water.
12. Generally good; very few failed, and if sunk a few feet deeper always an abundant supply.
13. No.
17. No.
18. Some typhoid fever, generally mild, except in the hands of some quack ignoramuses.

Disposal of Sewage.

8. Altogether.
9. Six by eight, and from four to ten feet deep.
10. No.
11. No.
12. None.
13. No.

Privy vaults seldom cleaned; kitchen garbage hauled away; slops thrown into privies or back yards.

The only source of pollution is privies and slops. This does not have any visible effect. The water is pure and abundant.

POTSDAM—POPULATION 150.

REPLIES BY S. P. DEAHOFE, M. D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. Simply dug.
8. Ten to twenty-eight feet.
10. Has never been analyzed to my knowledge.
11. They are usually located within fifty to one hundred feet.
12. Good.
13. No.
14. Not at all.

Disposal of Sewage.

1. None.
8. Altogether.
9. About three by four and four feet deep.
10. No.
11. No.
12. None.
13. Simply thrown out or fed to stock.

TIPPECANOE CITY—POPULATION 1,500.

REPLIES BY S. B. HARTMAN, M. D.

Water Supply.

1. Wells, dug and walled.
2. No water works; none contemplated.
4. Not used.
6. The only kind used for drinking and cooking.
7. Old-fashioned dug and walled; some cased with tile.
8. About twenty feet.
9. Don't know; have no artesian well in town or vicinity.
10. West of town, clay, underlaid with gravel; East, black loam, underlaid with gravel.
11. Almost all family wells are situated within seventy-five to one hundred feet of privy vaults.
12. About twenty-five per cent. dry, and fully ninety per cent. had less than two feet of water.
13. No; we have had less sickness than any year in the past fifteen.
14. Not a family in town uses it exclusively.
17. Yes.
18. About six or eight cases of typhoid fever treated last fall, I thought contracted from the drinking water.

Disposal of Sewage.

1. About one-eighth mile.
2. About six or eight.
3. By openings for gutters at street crossings.
4. About five feet deep by three wide.
5. Four-inch tile.
6. Into Miami canal.
7. No.
8. Universally.
9. Four by four, and six feet deep.
11. No.
12. None at all.
13. Occasionally removed; generally covered with earth.

Town situated on a hill, sloping east, rising in one mile one hundred and fifty feet, making a surface that drains itself.

MIAMI COUNTY—Continued.

TROY—Population 5,000.

REPLIES BY J. W. MEANS, M. D.

Water Supply.

1. Drove wells.
2. Yes.
4. (*a*) One-fourth mile. (*b*) Water is taken from a large well. (*c*) None.
5. Can't tell.
6. Three-fourths of the people.
7. Majority drove wells.
8. Twenty feet.
9. Can't tell.
10. Sandy.
11. Great liability to be contaminated, especially dug wells.
12. A great many went dry.
13. More typhoid fever than usual.
14. Not at all.
17. Yes.
18. Typhoid fever and bowel complaint.

Disposal of Sewage.

1. None.
8. Almost entirely.
9. Six to eight feet.
10. No.
11. No.
12. None.
13. By wagons.

MONROE COUNTY.

CLARINGTON—Population 1,000.

REPLIES BY J. G. SEITER, M. D.

Water Supply.

1. Wells.
2. None in use, nor contemplated.
3. (*a*) To small extent from Ohio River. (*d*) Above, Powhattan; below, Barnesville.
6. About altogether.
7. Dug wells.
8. About forty feet.
9. Don't know.
11. Some to quite an extent.
12. Very low.
13. No.
14. To no extent.
17. No.

Disposal of Sewage.

8. Used altogether.
9. Should think about four by six feet, and not over four to six feet deep.
10. No.
11. No.
12. No extent.
13. Thrown in alleys and fed to hogs, etc.

JERUSALEM—Population 200.

REPLIES BY STEWARD & GRIFFITH, M. D'S.

Water Supply.

1. Wells and cisterns.
6. Exclusively for drinking and culinary purposes.
7. Dug and drilled wells.
8. Twenty-five to sixty feet.
10. Clay soil, with a streak of limestone soil.
11. Not much danger of contamination. Most privies have no vaults.
12. Water was extremely scarce in most of them.
13. No; nor to any other condition. Dry time for the doctors.
14. None used.
17. Not this year.
18. In 1881 an epidemic of diphtheria, and in 1885 one of typhoid fever were, in my judgment, to be attributed to impure water.

Disposal of Sewage.

1. None.
8. Not many in use.
10. No.
11. No.
12. Not at all.

STAFFORD—Population 300.

REPLIES BY J. L. MASON, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
8. Twenty to fifty feet.
9. Don't know.
10. Rock.
11. None.
12. Water very scarce and still continues so, but enough for use.
13. No.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. One-fourth.
9. Three to ten feet.
10. No.
11. No.
12. Three-fourths.
13. Thrown into back of lot.

WOODSFIELD—Population 1,000.

REPLIES BY W. J. GRIMES, M.D.

Water Supply.

1. Wells.
6. A large extent.
7. Common old-fashioned wells.
8. From thirty to fifty feet.
9. None here.
10. Soap stone, becoming harder as the depth increases.
11. A very small extent.
12. Very low; but the most of them free from impurities.
13. No.
14. None.
17. None.

Disposal of Sewage.

1. None.
8. In general use.
9. Generally very small and shallow.
10. No.
11. No.
12. None that I know of.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MONTGOMERY COUNTY.

BEAVERTOWN—POPULATION 300.

REPLIES BY SAMUEL SOUDERS, M.D.

Water Supply.

1. Wells.
2. No.
6. For drinking and house use.
7. Dug wells.
8. From twenty to thirty feet.
9. None.
10. The soil is compact limestone.
11. None at all, as a hole dug down three or four feet will hold water all summer.
12. About one-half of the wells were dry and are so at this time.
13. I think not.
14. Cistern water is not used for drinking.
17. Not here; the water is pure.

Disposal of Sewage.

1. Each residence has an underground ditch to carry the water from the cellar.
2. The ditches run back, some one hundred feet, some three hundred feet.
6. Some into the back lot, and some into a ravine west of town, and the ravine into a branch of Beaver Creek.
7. No.
8. A privy-vault to each residence.
9. From three to six feet deep, and from five to six feet square.
10. No; they hold water without cementing.
11. No; we have not.
12. Not at all.
13. Night-soil is deposited in privies, and kitchen-garbage and house-slops are fed to stock.

Beavertown (Dean P. O.) is elevated about three hundred feet higher than Dayton, and is noted as a healthy place.

BROOKVILLE—POPULATION 800.

REPLIES BY ALPHEUS DOVE, M.D.

Water Supply.

1. Wells.
2. No.
6. Exclusively.
7. Dug, and bored with 18-inch auger and lined with sewer pipe.
8. From fifteen to thirty feet.
10. Clay of blue cast, and fine black gravel.
11. To a very great extent; hog pens and privies are in close proximity.
12. Many of them failed to furnish a sufficient amount of water for household use.
13. No; it was a remarkable healthy summer; no general disease; only a few sporadic cases of diarrhœa, etc.
14. None of the inhabitants use cistern water for drinking.
17. No.

Disposal of Sewage.

1. None.
8. Very limited extent; only one or two in the town.
9. About six feet deep and three by seven wide.
10. No.
11. No.
12. None used.
13. Throw it all into the alleys and back part of lots.

Our town is a small place of about eight hundred inhabitants, located on Wolf Creek, in Clay township, and is surrounded by a good farming country. The town is gently rolling, with no general system of improvement.

DAYTON—POPULATION 59,000.

REPLIES BY J. M. WEAVER, M. D., H. O.

Water Supply.

1. Wells, open and driven, and Holly from flowing wells.
2. Holly system in use.
3. (*a*) No river water used.
5. Holly, 2,000,000 gallons.
6. Nine-tenths of families use it.
7. Dug and drove.
8. Dug wells, twenty feet; drove, thirty-five or forty feet.
9. Seventy feet; an unlimited supply; quality excellent.
10. Gravel and sand.
11. The dug wells very liable.
12. Dug wells impure and almost dry; deep driven wells good supply and fair water.
13. No.
14. Very limited.
15. Yes, at time of storing.
16. Brick and cemented.
17. A few cases only.
18. Diarrhœa and stomach troubles.

Disposal of Sewage.

1. No public system of sewerage.
8. Almost altogether.
9. About four by six feet and eight to ten feet in depth.
10. No.
11. No orders or rules as to construction; emptied by order of board of health.
12. None.
13. Dumped into Miami river below corporation line of city.

A system of flowing wells has recently been put down, and when increased machinery and pipes are added, this city will be well provided with pure water.

A recent canvas of our city shows that there are 4,764 driven wells in use; 3,745 open dug wells, and 832 families using Holly water. During the past summer our water works board sunk a series of eight-inch wells, at an average depth of about seventy feet. These wells are connected and furnish an abundant supply of pure water, which flows into a large well, and is directly pumped into the water mains. Heretofore the supply was limited, and came largely from Mad river, the water of which was utterly unfit for culinary purposes.

The supply now being ample and pure, arrangements are being made in the way of additional pumping machinery. by which, with additional supply pipes, the city will be well supplied. and, it is to be hoped, the old dug wells done away with. Our city has no system of sewerage, but any number of cesspools and uncemented privy vaults.

ANALYSIS OF DAYTON'S WATER SUPPLY.

To the Trustees of the Dayton Water Works:

GENTLEMEN: I have analyzed the sample of water from the new wells sent me by your Honorable Body, and herewith present my report:

Table I.—Showing the amount of the bases and acids present in the water; results expressed in grains per U. S. gallon:

	Gr. per gal.
Lime	4.6672
Magnesia	2.4845
Potassa	.2844
Soda	.9229
Alumina	.3599
Iron	Trace

MONTGOMERY COUNTY—Continued.

Carbonic acid (calcinated)	6.2212
Silica	.1858
Sulphuric acid	1.5674
Chlorine	.1605
Organic matter	Trace.
Loss	.0544
Total	16.9082
Deduct oxygen, equival't to chlorine	.0331
Total solids	16.8751

Table II.—The above bases and acids are supposed to be combined in the water, as follows:

	Gr. per gal.
Chloride of sodium	.2645
Sulphate of soda	1.7928
Sulphate of potassa	.5259
Sulphate of lime	.5348
Carbonate of lime	7.9395
Carbonate of magnesia	5.2175
Alumina	3.599
Iron	Trace.
Silica	.1858
Organic matter	Trace.
Loss	.0544
Total solids	16.8751

From the above tables it will be seen that the water is practically free from organic matter; in fact, it is as free from organic impurities as any natural water ever is. It will also be seen that the inorganic or mineral constituents are not such as are deleterious to health, and that the total amount of solids is small for this region. (The "total solids" in the water from the various wells of this region, analyzed by me, varies from 16.875, in the present analysis, to 64.674; by far the greatest number of wells furnish water holding in solution from twenty-one to thirty grains of solids to the gallon.)

If the water supply turns out to be ample, the citizens of Dayton, when rehearsing the many attractions of our city, will be able to boast of having a water supply equaled by few and surpassed by no other city.

Respectfully submitted,
H. S. JEWETT, M. D.,
Analytical Chemist.

GERMANTOWN—POPULATION 2,000.

REPLIES BY MICHAEL TROUT, M. D.

Water Supply.

1. Wells.
2. None in use, nor contemplated.
7. Such as are in use in most sections of our country.
8. From fifteen to thirty feet.
9. Have none.
10. After digging eight or ten feet, then get clean ground.
11. Our privies are not in close proximity to our dwellings.
12. Water was very low, and not pure.
13. Was not.
14. Very little used for drinking.
17. I think there were some cases.
18. A few cases of typhoid fever; no prevailing epidemic.

Disposal of Sewage.

1. None.
8. Altogether.
9. From six to twelve feet.
11. No.
12. Not any.
13. Night soil thrown in privy; garbage and slops given to pigs.

MIAMISBUGH—POPULATION 3,500.

REPLIES BY W. S. BOOKWALTER, M.D.

Water Supply.

1. Wells.
2. No, and none contemplated.
6. Altogether.
7. Both drove, and dug wells with stone curb.
8. From twenty-eight to thirty feet.
9. Can't say; have never bored for it.
10. It varies somewhat; generally first, black loam, next clay, then gravel, and a little deeper hard pan; find water in gravel; best water beneath hard pan.
11. There is no doubt but that a great many are more or less liable to be contaminated from vaults—average distance from wells, forty to sixty feet, some closer.
12. Water low.
13. No.
14. It is not used for drinking purposes.
17. There has been none directly attributed to such cause.

Disposal of Sewage.

1. None.
8. Altogether.
9. The rule is not less than eight feet deep.
10. No.
11. By rule of board of health.
12. Not at all.
13. Night-soil is disposed of between the hours of twelve at night and four in the morning, taken outside of the corporation; garbage the same.

NEW LEBANON—POPULATION 200.

REPLIES BY O. F. EDWARDS, M.D.

Water Supply.

1. Wells.
2. None, and none contemplated.
6. For use of family; drinking and cooking.
7. Dug wells.
8. Twelve to thirty feet, or more.
11. They are generally from thirty to fifty yards distant.
12. One-half of the wells in the village were dry.
13. Diphtheria prevalent in fall; couldn't say that it was due to drouth.
14. None.
17. Not any.

Disposal of Sewage.

8. One for each family.
9. Six to ten feet deep.
10. No.
11. No.
12. None.
13. Fed to hogs and deposited on garden lots, and compost as manure.

VANDALIA—POPULATION 400.

REPLIES BY LEE CORBIN, M.D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Altogether.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MONTGOMERY COUNTY—Continued.

7. Dug and walled wells.
8. About twenty feet.
10. Clay and black loam.
11. Same as in all villages; in some cases uncomfortably near privy-vaults.
12. All were low, and a portion entirely dry.
13. No.
14. Scarcely at all.
17. No.

Disposal of Sewage.

1. None.
8. Every family uses them.
9. Size of ordinary privies, and probably average of five feet.
10. No.
11. No.

Our territory (Northern Montgomery county) has been remarkably free from any contagion or epidemical diseases throughout the drouth of last season.

MORGAN COUNTY.

DEAVERTOWN—POPULATION 300.

REPLIES BY G. L. KENNEDY, M. D.

Water Supply.

1. Entirely from wells.
2. None; none contemplated.
6. Entirely.
7. All are dug; used mostly with open curb; some few pumps.
8. An average of 25 to 30 feet.
10. First clay, then soapstone to flint rock. where water is usually found.
11. The majority of them are free from any danger.
12. The greater portion failed, but water perfectly pure in those that furnished our supply.
13. Not in our village, but to some extent in surrounding country.
14. Not used.
16. Brick and cement.
17. I believed it to be the exciting cause.
18. There was both typhoid and typho-malarial fever—in all some 20 cases; in one family seven cases of the latter, originating from impure water and decaying matter.

Disposal of Sewage.

1. We have none.
8. Entirely.
9. About 2 feet wide, 4 feet long, and 4 feet deep.
11. No.
12. Not used.
13. There is no rule, each family disposing of it as suits convenience.

Our village is situated on a high hill and is naturally drained on all sides, and all impure matter is usually carried off by the frequent rains.

MORROW COUNTY.

ANDREWS—POPULATION 100.

REPLIES BY I. L. GREAVES, M. D.

Water Supply.

1. Dug and driven wells.
2. No.
6. Altogether.
7. Dug and driven.
8. 20 to 25 feet.
10. Hard pan, blue clay.
11. Not more than the ordinary farm wells.
12. Almost dry, excepting the two driven wells, which furnished nearly all the water.
13. No; the general health has been remarkably good, considering the scarcity of water.
14. Very little.
15. No.
16. Brick or plank.
17. No.

Disposal of Sewage.

1. No sewers. This is a small town of about 75.
1. None.

BENNINGTON—POPULATION 150.

REPLIES BY F. C. SHAW, M. D.

Water Supply.

1. From wells.
2. No.
6. None other.
7. Walled with stone.
8. 20 feet.
10. Clay.
12. Low.
13. None.
14. None.
17. None.

Disposal of Sewage.

1. None.
12. We have no board of health.
13. Fed to hogs.

CHESTERVILLE—POPULATION 300.

REPLIES BY B. F. JACKSON, M. D.

Water Supply.

6. Entirely.
7. Both walled and driven.
8. From 18 to 30 feet.
9. None here.
10. Gravel and sand.
11. None.
12. Many were entirely dry.
13. No, not in this immediate locality.
14. None to my knowledge.
16. Stone or brick, water lime.
17. No.

Disposal of Sewage.

1. None.
8. Each family has one.
9. 4 feet by 5 deep; average 4 feet.
10. Generally wooden vaults.
11. No.
12. None.
13. Night-soil in privy vaults; slops from kitchen on surface of back lots.

Our village is noted for the excellency of its drinking water.

MORROW COUNTY—Continued.

MARENGO—Population 300.

REPLIES BY J. W. PRATT, M.D.

Water Supply.

1. Cisterns and wells.
2. One is contemplated.
6. About one-half.
7. Bored and dug wells.
8. Forty to forty five feet.
9. No wells of this class.
10. Clay.
11. Not liable.
12. Most of them were very low.
13. There was typhoid fever; the most severe I have experienced since I have been here, now ten years.
14. About one-half.
15. It is not generally filtered.
16. There are some plank, but the most of them are bricked and plastered.
17. I have.
18. I had five or six cases of typhoid fever in the neighborhood where one of the bored wells was, which I attributed to the water.

MT. GILEAD—Population 1,800.

REPLIES BY H. H. SHAW AND W. L. CASE, M.D.'S.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
3. About October 1, 1887, spring water was forced a distance of one-half mile by means of a hydraulic ram to the public square, which has been a source of supply for drinking water for the town. The quality is first class. No cases of typhoid appeared in families where this water was used.
6. Very generally.
7. Mostly excavated; a few driven.
8. From ten to sixty feet.
10. Clay.
12. Nearly all failed; those which did not, contained water of poor quality; no microscopic or chemical examinations.
13. Typhoid fever was prevalent during the early autumn months.
14. Perhaps five per cent.
15. After storing; always filtered.
16. Of brick and cement.
17. Yes.
18. About a half dozen cases of typhoid with two deaths.

Disposal of Sewage.

1. Not to exceed a half mile.
2. About a dozen.
3. Yes.
4. Two feet.
5. From four to ten inches.
6. In an open field near the river.
8. Privies are generally built without vaults; are cleaned from the back part.
11. No.
12. Know of none.
13. Thrown into drains, on manure piles, and carted away.

WESTFIELD—Population 300.

REPLIES BY EPHRAIM LULLEN, M.D.

Water Supply.

1. Wells.
6. All.
7. Dug and walled with brick or stone.
8. About twenty-two feet or from eighteen to twenty-eight feet.
9. There is not any.
10. Clay.
11. I should think but very little, if any.
12. The water was very low, and some failed entirely.
13. But very little.
17. One family of four.
18. Two had typhoid fever, the others were quite poorly; their well had not been cleaned for some time, the water had become very impure.

This is a small village of about thirty dwelling houses, and those not very close together.

WHETSTONE—Population 200.

REPLIES BY A. A. NEFE, M. D.

Water Supply.

2. No; no.
6. For drinking and cooking altogether.
7. Dug wells.
8. Eighteen to thirty-five feet.
10. Three feet soil, ten to twenty feet blue clay; below that, gravel and quicksand.
11. Some are close enough to be so contaminated; others are not so close.
12. A majority of them went dry.
13. Bowel troubles and malaria.
14. Not at all.
17. Yes.
18. Some cases of typho-malarial fever and of dysentery and cholera infantum; also of diphtheria, as reported.

Disposal of Sewage.

1. None.
8. One for each family usually, though several privies have no vaults.
9. Three by five feet on surface; three feet deep.
10. None of them are.
11. No.
12. None.
13. Thrown where it will do the most damage, *i. e.*, near the kitchen door and well.

It seems impossible to get folks to believe that there is danger of contamination of water supply. Their parents did just as they do.

MUSKINGUM COUNTY.

ADAMSVILLE—Population 400.

REPLIES BY HENRY DECKER, M. D.

Water Supply.

1. Springs and wells.
2. No water works; none contemplated.
6. Three-fourths.
7. Some dug, and some bored.
8. Forty feet.
9. None in this town.
10. Sandy mostly.
11. None very close.
12. Generally plenty of water.
17. Not in this town.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

MUSKINGUM COUNTY—Continued.

18. We have no pools or wells of inferior water; consequently, no sickness of that kind here.

Disposal of Sewage.

1. None.
8. Used generally.
9. About four by six feet.
10. They are not.
11. They are regulated by order of the town council and marshal.
12. Not any here.
13. Generally thrown in privy vaults, or in some hole in the ground, and covered up.

CHANDLERSVILLE—Population 300.

REPLIES BY ROBERT E. CHAMBERS, M.D.

Water Supply.

1. Wells; water is good as it is well filtered through gravel.
2. None in use, and none contemplated.
6. Exclusively.
7. Walled wells; one drove well.
8. From twelve to thirty feet.
9. In sinking for silver, at the depth of one hundred and forty feet, a strong run of water was struck, driving them from the shaft; it was pure water.
10. Sand, clay and gravel.
11. A few have privy-vaults on the hill above their wells.
12. We have had an abundance of water, and been free from fevers.
13. Not any.
14. Not used by any family.
17. I have in the country, but not in the village.
18. We have been free from sickness the last year; in fact, for the last three years not a case of fever.

Disposal of Sewage.

1. Not any in the town.
8. Every family has one, and they are not very deep.
9. Shallow.
10. No.
11. No.
12. Not any.

We are not an incorporated village, and everyone has free privilege of doing as he pleases, and whilst you would think that sickness would result, yet it has not.

DUNCAN'S FALLS—Population 275.

REPLIES BY O. B. CRUMBAKER, M.D.

Water Supply.

1. Wells.
2. None.
6. Probably ninty per cent.
7. Ordinary walled up wells.
8. Twenty to twenty-four feet.
9. None in the vicinity.
10. Gravelly.
11. Soil is certainly favorable for all surface water to percolate through.
12. Very low, and water very impure.
13. A few cases of typhoid fever in families who used water from the worst wells.
14. Probably ten per cent.
15. Yes; before.
16. Double; the water passing into one side, and passing through a chamber filled with gravel and charcoal.
17. A great many that I believed to be so attributable during the past ten years.
18. Generally typhoid and malarial fevers.

Disposal of Sewage.

1. No system of sewerage in use.
8. Each house has its privy-vault.
9. Perhaps average four feet wide by six feet deep.
10. No.
11. No.
12. Scarcely at all.
13. Night-soil to the privy-vault, house-slops to the back yard, and garbage to the alley.

Two basins are allowed to remain undrained, which receive the drainage of the greater part of the town, and perhaps one hundred acres of adjoining country. This sinks into the soil, and doubtless finds its way into the wells.

FRAZEYSBURGH—Population 600.

REPLIES BY JASPER CORN, M.D.

Water Supply.

1. Wells.
6. Universally.
7. Open.
8. Twenty feet.'
10. Sandy soil; gravel-bed at bottom of wells.
11. Great extent.
12. Good; none gave out.
13. No.
14. None.
17. No.

Disposal of Sewage.

8. Universal.
9. Four feet wide, eight feet deep.
10. No.
11. No.
12. Not used.

NEW CONCORD—Population 700.

REPLIES BY ISAAC W. CHISHOLM, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. The common or dug wells.
8. About 20 feet.
9. Have none.
10. Limestone and clay.
12. Low; some failed and water became very hard.
13. No, not in town; three miles east, at Capell's Station, diphtheria prevailed in a very malignant form.
14. None.

Disposal of Sewage.

1. None.
8. Almost every privy in town has a vault.
9. About 10 feet.
10. No; planked, or just the earthen walls.
11. Yes.
12. None.
13. Thrown in alleys and hauled to outside limits.

NASHPORT—Population 150.

REPLIES BY P. Q. FISHER, M. D.

Water Supply.

1. Wells.
2. No.

MUSKINGUM COUNTY—Continued.

6. Almost exclusively—a little spring water.
7. Dug and driven, principally the former.
8. Twenty-five feet.
9. None.
10. Gravelly.
11. Not much apparent liability.
12. Usually afforded plenty of water.
13. Healthy.
14. None, practically.
17. No.

Disposal of Sewage.

1. None.
8. A few.
10. No.
11. No.
12. None.
13. Thrown on surface or fed to hogs.

ROSEVILLE—Population 800.

REPLIES BY GEO. W. W. WALKER, M. D.

Water Supply.

1. Well and spring water; also private cisterns.
2. One in contemplation.
3. Will be taken from a spring.
6. Exclusively, with exception of a few open springs.
7. Open; walled with stone or brick.
8. From 10 to 25 feet.
9. None have been successfully made.
10. Sandy loam; water found in quick sand at depth stated above.
11. Very much so in some locations, as the soil is very open and absorbs readily.
12. The wells are nearly dry now, more so than for many years, partly on account of drouth and partly on account of the dam being removed.
13. Typhoid fever prevailed at different times during summer and fall; seemed to originate from a well, as all the families who used water from it were affected alike.
14. Not at all.
17. Yes.
18. Generally typhoid or some form of malaria.

Disposal of Sewage.

1. None.
8. Almost exclusively.
9. Depth about 6 to 8 feet.
10. No.
11. Sometimes, when they become so filled that the smell becomes an annoyance.
12. But few.
13. But little attention paid to it; is not regulated by ordinance.

The greatest source of disease has always been from the school-house and grounds, they being the source, with a few exceptions, of all the fatal epidemics in the town in the last year.

WHITE COTTAGE—Population 150.

REPLIES BY A. W. SQUIRES, M. D.

Water Supply.

1. Wells.
2. No water-works and none contemplated.
6. Nearly all the water used is well water.
8. Ranging from twelve to twenty feet.
9. About three hundred feet; there is one flowing, containing a very large amount of chloride of sodium.
10. Sandy loam and gravel, underlaid with limestone.
11. Largely, especially in wet weather.
12. Better than during wet weather.
13. No, but during wet times bowel trouble prevails.
14. Very few cisterns.
15. No; but one in town has a filter, and it filters after storing.
16. Of brick and water-lime or cement.
17. Yes.
18. It is when we have high water, and it is confined to the bowels (diarrhœa); had nearly thirty cases at one time.

Disposal of Sewage.

1. None.
8. They are used altogether.
9. Average four by five and four to five feet deep.
10. No, not one in town cemented.
11. No; there are some that have not been emptied for ten years.
13. It is either thrown into the privy vaults or on the surface of the lots.

NOBLE COUNTY.

BATESVILLE—Population 400.

REPLIES BY T. S. ROSENGRANT, M. D.

Water Supply.

1. Our chief source is from wells.
2. None in use; none contemplated.
7. The old-fashioned windlass wells; no pumps in town.
8. Twenty-eight to fifty feet.
10. Principally limestone soil.
11. They are not liable to contaminotion.
12. Some of them got low, but none failed entirely.
13. There was not.
14. Only one used for drinking water in town.
15. Filtered before storing.
17. None have come under my notice.

Disposal of Sewage.

1. We have no sewers in our town.
8. Regular privy vaults are not in use here.
12. They are used almost exclusively.
13. Uusually thrown into the alleys or onto the back lots.

Our town has excellent natural drainage; our drinking water is free from pollution, and our people are blessed with good health.

BERNE—Population 305.

REPLIES BY HON. A. I. DORR, M. D.

Water Supply.

1. Wells.
6. The only water we use is well water.
8. Twelve to thirty feet.
10. Limestone.
11. Well protected.
12. The most of our wells had plenty of water.
13. None.
14. None.
17. None.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

NOBLE COUNTY—Continued.

Disposal of Sewage.

8. None.
12. Altogether.
13. Night-soil to privies; kitchen garbage, etc., fed to hogs.

CALDWELL—Population 1,500.

REPLIES BY J. MARTIN, M. D.

Water Supply.

1. Wells.
6. Very little water used from any other source.
7. Chiefly dug; there are a few bored wells.
8. Dug, twelve to twenty feet; bored, forty to seventy-five feet.
9. No test of boring for artesian water has ever been made.
10. Clay and limestone soils.
11. A few are so liable, but these are exceptions.
12. Generally very low; a few entirely dry.
14. Very little used for such purpose.

Disposal of Sewage.

1. Have none.
8. In general use, but dry earth closets are beginning to take their places.
9. Five by two, and five feet deep.
10. Not usually.
11. Yes.
13. There is no general system.

EAST UNION—Population 200.

REPLIES BY G. T. TINGLE, M. D.

Water Supply.

1. Wells.
2. No water works, nor none contemplated.
6. None other but well water used.
7. Dug wells.
8. From sixteen to thirty feet.
9. None here.
10. Limestone.
11. Not liable to such.
12. Good; plenty of water.
13. No.
14. None.
17. No.

Disposal of Sewage.

8. All families use them.
9. Four by five feet.
10. No.
11. No.
12. None.
13. Slop and kitchen garbage generally fed to hogs.

HARRIETSVILLE—Population 150.

REPLIES BY J. W. BROCK, M. D.

Water Supply.

1. From wells.
2. None.
6. Universal.
7. They are dug, and walled with stone.
8. Fifteen to twenty-five feet.
9. None.
10. Loam, with a bottom of gravel.
11. Minimum extent; I never found any contamination.
12. Being on low grounds mostly, they afforded some water all the time.
13. None.
14. None.
17. None.

Disposal of Sewage.

1. None.
8. Principally; some with dry earth boxes.
9. Don't know.
10. No.
11. No.
12. None.
13. Sometimes buried; other times just scattered to the four winds of heaven.

KENNONSBURGH—Population 309.

REPLIES BY JAMES H. ABBOTT, M. D.

Water Supply.

1. Wells.
2. No water works.
6. Altogether.
7. The old-fashioned well.
8. Twenty-five to forty feet.
10. Limestone soil.
11. Liabilities are not great.
12. Low, but good water.
13. No.
14. None.
17. No.
18. Our village is small; the liabilities are very light.

Disposal of Sewage.

8. Every family has its privy.
9. Six feet.
10. No.
11. No.
12. None.

MT. EPHRAIM—Population 175.

REPLIES BY JOHN KELLER, M.D.

Water Supply.

1. Springs and wells.
2. None.
6. Generally.
7. Mostly the old-fashioned wells, dug by hand, and walled with rock.
8. From twenty to forty feet.
11. In consequence of the location of the village, the ground being a high elevation, there is but slight danger of contamination.
12. Failed; water impure; not fit for use.
13. None.
14. Not used.
17. None traceable to conditions of water.
18. No epidemic; rheumatism of a chronic form is the common disease.

Disposal of Sewage.

1. Our village has no sewerage.
12. Most families use earth closets.

SARAHSVILLE—Population 300.

REPLIES BY WM. S. SPRIGGS, M.D.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
6. Nearly altogether.

NOBLE COUNTY—Continued.

7. Mostly wells with chain pump; some old-fashioned windlass.
8. Twenty to fifty feet.
9. None here.
10. Limestone.
11. Hardly at all.
12. Water scarce; many entirely dry.
13. No.
14. Not much used.
15. Generally filtered.
17. No.

Disposal of Sewage.

1. None.
10. No.
11. No.
12. Mostly.
13. Mostly thrown in ditches to be carried away by rains.

Our village is small and not much crowded; the land is uneven, and the natural drainage good.

OTTAWA COUNTY.

ISLE ST. GEORGE.

REPLIES BY CHARLES D. TOWNSEND, M.D.

Water Supply.

1. Lake Erie, and by drilling and blasting through the delmite rock.
2. None in use, and none contemplated.
7. Blasted, and drilling through rock.
8. About forty feet.
10. Delmite rock; we are situated on the Cincinnati ridge, geologically.
13. No unusual prevalence of any form of disease has prevailed on this American group of islands.
14. To some extent.
15. Both before and after.
16. Of stone and brick well cemented.
17. Not on this Isle, but on Prelee Isle, Canada, quite serious malarial fevers prevail.

PAULDING COUNTY.

DAGUE—POPULATION 700.

REPLIES BY C. W. GORDON, M. D.

Water Supply.

1. Wells and cisterns.
6. Is used more than any other.
7. Wells walled with brick or tile.
8. About sixteen feet, and bored about the same.
10. Blue clay, through what they call hardpan above the water.
11. The town well, from which the greater portion is used, is located so that the wallows of hogs can contaminate it.
12. Very low.
13. Typhoid and typho-malarial fever.
14. Used by two families.
15. Not filtered.
16. One is wood, the other cemented.
17. I have.

Disposal of Sewage.

8. Altogether.
9. Three to five feet.
10. No.
11. No.
12. None at all.
13. Night-soil is buried, and the other fed to the hogs.

PAULDING—POPULATION 2,000.

REPLIES BY P. ALVIN DIX, M. D.

Water Supply.

1. Wells and cisterns.
2. No system, nor any in contemplation.
6. Three-fifths.
7. Mostly dug by hand.
8. Twenty to forty feet.
9. There is none here.
10. Clay, or black loam.
11. One-fourth.
12. Very low.
13. Yes, especially malarial fever.
14. Two-fifths.
15. No.
16. Mostly of pine wood; a few only of brick.
17. Yes.
18. 1st, diarrhœa is most common; 2d, biliousness and cholera morbus; 3d, malaria.

Disposal of Sewage.

1. One-half mile.
8. Very few.
3. Not at all.
4. One foot to eighteen inches.
5. Four to six inches.
6. In creek running through town.
7. Sometimes.
8. Wholly.
9. Six to eight feet deep, three feet wide and six to twelve feet long.
10. No.
11. No.
12. None.
13. Thrown in streets and alleys, or in privies.

I suppose the filthiness and stench from pig stys and privies have caused a great deal of sickness here the past year.

PERRY COUNTY.

MOXAHALA—POPULATION 375.

REPLIES BY A. M. BROWN, M. D.

Water Supply.

1. Wells.
2. None in use; none contemplated.
6. Our water supply is all from wells.
8. From nine to twenty-three feet.
10. Clay.
11. Not in close proximity to privies.
12. Some wells were dry, while others contained water in abundance.
13. We had no prevailing diseases during the past summer.
14. None used.
17. I have not.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

PERRY COUNTY—Continued.

Disposal of Sewage.

8. Nearly all privies are vaulted.
9. From two to five feet.
10. They are not.
11. It is not.
13. Generally thrown in the streets and alleys.

NEW LEXINGTON—POPULATION 1,800.

REPLIES BY J. H. WRIGHT, M. D.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
6. Exclusively.
7. Open wells.
8. From ten to sixty feet.
10. Sand and clay.
11. Not to a very great extent.
12. Most of them were low, and a few of them were dry.
13. No.
14. A few persons use it.
15. No; only that part which is used for drinking.
16. Underground; walled and cemented.
17. Not many.
18. Some few cases of typhoid fever.

Disposal of Sewage.

1. None.
8. Almost entirely.
9. Five by six feet in width, and four to eight feet in depth.
10. No.
11. No.
12. Used in school-house.
13. Kitchen garbage fed to pigs; house slops thrown on surface.

The principal sources of pollution are from surface water, pig-pens, horse stables, etc.

NEW STRAITSVILLE—POPULATION 3,000.

REPLIES BY H. C. ALLEN, M. D.

Water Supply.

1. From wells.
2. No.
6. Almost altogether.
7. Walled wells.
8. Vary in different parts of town from ten to forty feet.
10. Sandstone.
11. Very liable to such contamination, as the privies, in some instances, are on high ground. The wells low.
12. Majority were dry, or nearly so.
13. No; I do not think water was scarce enough for that; most families could borrow from neighbors whose wells were good.
14. By perhaps a dozen families.
15. Yes; before.
16. With only a charcoal box to run the water through before entering the cistern.
17. Not many.

Disposal of Sewage.

1. We have one open brick sewer, about one-fourth mile.
2. About fifty.
8. Altogether.
9. Probably average four by six feet; four feet deep.
10. No.
11. No.
12. Not at all.
13. Thrown in privy vaults, or any convenient place.

SHAWNEE—POPULATION 3,000.

REPLIES BY J. D. AXLINE, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
7. Both dug and bored.
8. Very variable—twenty to fifty feet.
9. Bored wells are from forty to one hundred or more feet in depth. None flow from surface, but furnish a great deal of water.
10. Clay; some above and some below the coal vein.
11. Generally fairly well protected from this kind of infection, but many cases of gross negligence.
12. Exhausted.
13. None whatever, to everybody's surprise.
15. Twenty-five to fifty per cent.
15. In the process of storing.
16. Brick cemented.
17. None clearly so.

Disposal of Sewage.

1. No system.
8. Village ordinance requires them, and is fairly well executed.
9. Four by five or six, and five or six feet deep.
10. No.
11. By both; that is, the ordinance is looked after by Board.
12. None.
13. Dumped into streets, alleys, and vacant lots.

The water in the branch that runs through the village is unfit for use of any kind, on account of the whole bed being filled with coal slack and furnace cinders.

SOMERSET—POPULATION 1,300.

REPLIES BY ROBERT BRUCE WOODWARD, M. D.

Water Supply.

1. Wells and springs.
7. Ordinary wells.
8. 12 to 60 feet.
10. Clay soil; some sand.
11. Such as usually found in villages of this size.
12. Water remains good.
13. No.
14. None.
16. Brick and cement.
17. Not certain that I have.

isposal of Sewage.

1. None.
8. In general use.
9. 5 to 10 feet.
10. No.
11. No.
12. None.
13. Give them to the hogs, and then eat the hogs.

THORNVILLE—POPULATION 500.

REPLIES BY G. W. CLEMSON, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Almost exclusively.
7. Dug.
8. 15 to 40 feet.
10. Clay.
11. None near enough for contamination.
12. Quite low; some dry.
13. Typhoid and typho-malarial fevers.
14. A few.
15. Filtered before storing.
16. Brick and cement.

PICKAWAY COUNTY.

ASHVILLE—POPULATION 450.

REPLIES BY D. H. SQUIRE, M. D.

Water Supply.

1. Wells.
2. None whatever.
6. Entirely.
7. Dug wells.
8. 20 to 25 feet.
10. Hard clay for 15 to 18 feet, then sand and gravel.
11. To a great extent; some wells are within 20 feet of privies.
12. Wells were low, and often dry.
13. None.
14. None.
17. None positive.

Disposal of Sewage.

8. Largely, for the size of town.
9. 4 to 6 feet.
10. Never.
13. Thrown on streets or in back part of lot or in alley.

We have no sewer system, and our sanitary condition is not good; but little trouble has arisen as yet.

COMMERCIAL POINT—POPULATION 300.

REPLIES BY SAMUEL C. HELMICK, M. D.

Water Supply.

1. From wells.
2. No, it is not.
6. Wholly.
7. Common.
8. 15 feet.
10. Sandy.
12. The water got very low in them, and some went dry.
13. No.
14. None.
16. Of brick.
17. Some little.
18. Fevers and diarrnœa.

Disposal of Sewage.

1. None.
8. Wholly.
10. No.
11. No.
12. A few of them.

NEW HOLLAND—POPULATION 700.

REPLIES BY JNO. B. MAY, M. D.

Water Supply.

1. From gravel and sand strata about 20 to 30 feet, and another about 60 feet deep.
2. No.
6. Universal.
7. Mostly closed and the ordinary wood pump; some drove wells.
8. 20 to 30 feet; rarely 60 feet.
10. Principally blue clay.
11. Variable; in many instances faulty arrangement.
12. Some of the wells were dry; others, of no greater depth, were not.
13. No.
14. Very limited.
15. When used, filtered before storing.
16. Walled with brick and cemented.
17. I don't remember any case,

Disposal of Sewage.

1. None.
8. Vaults are in use very generally.
9. Variable—from 4 to 8 feet.
10. No.
11. No.
12. None in use.
13. Haphazard.

TARLTON—POPULATION 425.

REPLIES BY JOHN J. BAKER, M. D.

Water Supply.

1. Wells and cisterns.
2. None.
6. Almost altogether.
7. The ordinary well.
8. From twenty to forty feet.
10. Gravel and clay.
11. Digging a well twenty feet deep, and a cess-pool ten feet, not fifty feet from it, is the common mode.
12. Many of them dry.
13. Not here.
14. Moderately.
15. Not filtered.
16. Of brick, and cemented.
17. In a few cases.
18. Diarrhœa and malarial fever.

WILLIAMSPORT—POPULATION 500.

REPLIES BY T. C. TIPTON, M. D.

Water Supply.

1. Drinking water from a white sulphur spring.
2. No.
6. Perhaps one-half drink well water.
7. Each family digs their own well.
8. Twelve to thirty feet.
9. Never been tried.
10. Clay surface, then slate; water found on the slate.
11. Not any; the town is on a hill; we have good drainage.
12. Nany failed or got very low.
13. I think not; yet we had, perhaps, a little more malaria this last year than an average.
14. But very little.
15. Filters of brick in the cistern.
16. Dug in ground and walled with brick and plastered with cement.
17. I certainly have.
18. One family suffered with what appeared to be poison from a brass kettle in the well; four persons attacked with vomiting and purging, then broke out in sores.

Disposal of Sewage.

1. About one.
2. They are only for surface water.
3. Not any.
4. Four to eighteen inches.
5. Seven inches.
6. Into Deer creek.
7. No.
8. Each family has one on their lot.
9. About four by six and five feet deep.
10. No.
11. No.
12. None at all.
13. Tilted in privy vault or on the surface.

I think we are well supplied with water; the best sulphur water in a spring I have ever found.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

PIKE COUNTY.

CYNTHIANA—POPULATION 200.

REPLIES BY J. W. LITTLE, M. D.

Water Supply.

1. Wells.
2. None; none contemplated.
6. Altogether.
7. Dug and walled with rock.
8. Average about twenty-five feet.
10. Clay, generally, underlaid with sand and gravel.
11. As a rule, they are too far from privy vaults for any contamination.
12. A few of the shallowest were almost dry, the others (from twenty feet up) had plenty of good, pure water.
13. There was not. The summer and fall past has been an exceptionally healthy one in this locality.
14. Not at all.

Disposal of Sewage.

1. None.
8. Used altogether.
9. From four to eight feet deep and about four feet wide.
10. No; usually just walled with brick.
11. No.
12. Not used.
13. Is generally packed off and thrown away.

We have as good water as you will find in the State, and the country surrounding our town is mostly supplied by springs.

OMEGA—POPULATION 200.

REPLIES BY J. B. RAY, M.D.

Water Supply.

1. Wells.
2. None in use or contemplated.
6. Almost universal; some springs.
7. Common ordinary wells, walled with flat stone.
8. From twenty to thirty feet.
9. None in this county as far as I know.
10. In the low lands limestone and gravel; on the higher lands quicksand nearest the water and clay above.
11. On the gravelly lands they are the most liable to be contaminated, and I have observed some seasons when typhoid fever was caused by privies over a hundred feet away.
12. Not any that I am aware of became dry.
13. I think not; it has been the healthiest year that has passed for many seasons; I have tried to instruct the people to observe some sanitary laws.
14. Probably one-half of the people up and down the valley.
15. Some filter before, and others build an inside brick cistern for the water to filter through the brick.
16. Build by a proper hole being dug in the ground, then walled with brick and well cemented with water cement.
17. Yes.
18. Three or four years ago there were many cases of typhoid fever from using water.

Disposal of Sewage.

1. None.
8. On almost every lot in the little village, and on every farm.
9. About six feet deep by four by six.
10. No.
11. No.
12. Very limited.
13. The night-soil stays in the vault, and kitchen garbage and slops are fed to the hogs generally.

PIKETON—POPULATION 900.

REPLIES BY W. R. HURST, M.D.

Water Supply.

1. Wells, cisterns and the Scioto river.
2. None.
6. Nearly altogether.
7. Walled with stone.
8. Twenty to thirty feet.
9. None.
10. Sandy.
11. None.
12. Dry.
13. I think not.
14. Very little.
15. Not filtered.
16. About nine feet deep, walled with brick and cemented.
17. No.
18. The sickness was principally malaria.

Disposal of Sewage.

8. Altogether.
9. About nine feet by six feet.
10. No.
11. Neither.
12. None.
13. Thrown at large.

On the high lands the water was very scarce and very muddy with clay; hauled quite a distance; think it induced malarial fever and flux.

WAVERLY—POPULATION 1,600.

REPLIES BY AUSTIN HUTT, M.D.

Water Supply.

1. Wells and cisterns.
2. No.
6. This cannot, with any degree of accuracy be estimated.
7. The old-fashioned, excavated well, and walled with stone or brick.
8. From fifty to sixty-five feet.
9. Have none.
10. Black loam with yellow sandy clay, and underneath this gravel and sand.
11. Not known.
12. Apparently unchanged; the supply was abundant.
13. No.
14. To a very great extent; more so in winter than summer.
15. No.
16. Walled with brick and cemented.
17. No.

Disposal of Sewage.

1. Not to exceed half a mile.
2. Sewers were constructed for the purpose of drainaging the streets by carrying off storm water, and are still used for no other purpose.
7. No.
8. Entirely.
9. About four feet by six feet, and ten feet deep.
10. No.
11. No.
12. None.
13. None; usually fed to hogs.

PORTAGE COUNTY.

ATWATER CENTER—POPULATION 400.

REPLIES BY E. WARRINGTON, M. D.

Water Supply.

1. Wells and cisterns.
2. None in use and none contemplated.
6. About half the families use well water.
8. About twenty to twenty-five feet.
9. We have none.
12. Many were nearly empty.
13. Very little; the water was taken from the deep wells for drinking and cooking.
14. Nearly as much as well water.
15. It is, as it runs from the spouts.
16. With brick or stone wall, with mortar packed behind the wall.
17. I have sometimes.
18. Our worst cases of diphtheria came where the wash water was emptied out near the cistern.

Disposal of Sewage.

1. None.
8. Very few in use; I know of none.
11. It is not; they are not cleaned as often as they ought to be.
12. Very little; some use ashes in the privy.
13. It is generally thrown into a drain outside of the house and let run away.

These bad cases of diphtheria in two families; one family where the well contained pieces of chestnut rails, and the other family where the boys went to a polluted pond below here to bathe.

GARRETTSVILLE—POPULATION 1,200.

REPLIES BY LUTHER LEE JOHNSON, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. Some dug, but mostly drilled.
8. Minnimum, thirty feet; maximum, one hundred and sixty feet.
9. Never been tested; we have a baren gas well, which was discontinued at about four hundred feet, but no overflow of water.
10. Loam; the water is found in either gravel or the rock.
11. Not much danger from this source; I have known only of one well in three years.
12. A great many of them were dry; others the supply was greatly diminished.
13. No.
14. A few families use it.
15. Before.
16. Either brick or stone and cement.
17. Not since the well that I referred to in answering another question.
18. The members of the family I speak of were troubled with a low form of malarial fever; the contamination was from barn and not water closet.

Disposal of Sewage.

1. None to speak of; we use surface drainage in crossing streets; sometimes short sewers.
2. None.
6. What we have, also the surface drainage, empties into Silver Creek.
7. With water closets and all, we noticed a bad odor during late drouth.
8. In general use.
9. From three to five feet.
10. No; some use the dry system, and empty twice or three times per year.
11. Subjected to the control of local board of health.
12. I should say one-fourth of the closets are of this class.
13. Gardens are fertilized with all garbage, etc.

PALMYRA—POPULATION 600.

REPLIES BY W. G. SMITH, M. D.

Water Supply.

1. Dug wells and cisterns.
2. None in use or contemplated.
6. Almost universal in the township.
7. Dug.
8. Twenty to twenty-five feet.
9. There are none here.
10. Clay, (blue.)
11. Very limited, as ours is only a small village, and not compactly built.
12. Some failed, whilst others got very low.
13. None, without it might be that some cases of diarrhœa and dysentery, which was quite prevalent here, might be caused thereby.
14. Limited to a small section underlaid with coal.
15. Yes; after storing.
16. Dug out and cemented under ground.
17. None.

Disposal of Sewage.

1. None.
12. Almost exclusively.
13. Carried back a reasonable distance from the house.

Cisterns are used in the east part of the township, owing to the coal being mined at a depth of one hundred feet. Diarrhœa was quite prevalent in this district.

RAVENNA—POPULATION 4,000.

REPLIES BY C. S. LEONARD, M. D.

Water Supply.

1. Water-works, direct pressure.
2. Yes.
3. (*a*) Crystal Lake. (*c*) Soft and pure. (*d*) Kent, six miles west. Newton Falls, twelve and one-half miles east.
6. Five hundred and fifty consumers of lake water, balance use well water; population nearly 4,000.
7. Generally made of brick.
8. From fifteen to twenty feet.
10. Clay, sandy loam.
11. Liable to some contamination, about the same as most other villages.
12. Very low, many of them dry.
16. Of brick.
17. In a few instances.
18. I have attended a few cases of malignant diphtheria, which I attributed to the use of impure water.

Disposal of Sewage.

1. None.
8. Very few.
10. Yes.
11. Yes.
12. None.
13. Generally buried on or near the premises.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

PORTAGE COUNTY—Continued.

WINDHAM—Population 500.

REPLIES BY J. W. SHANK, M. D.

Water Supply.

6. Exclusively.
7. Dug.
8. Twenty-five to forty feet.
9. No artesian wells.
10. Gravel.
11. To slight extent.
12. Have had plenty of water.
13. None.
14. None.
17. None.

Disposal of Sewage.

1. About one mile.
2. About twenty-five.
3. By catch-basins, with screens over top.
4. One foot.
5. Six inches.
6. In river south of town.
7. None.
8. None.
12. Exclusively.
13. Out back door.

PREBLE COUNTY.

CAMDEN—Population 1,000.

REPLIES BY W. W. CANNY, M. D.

Water Supply.

1. From wells.
2. None contemplated.
6. Almost universally.
7. Wells dug, and walled with stone or sewer pipe; a few driven wells.
8. Fourteen to thirty feet.
9. Three gas wells have been put down; one 900 feet; one 600 feet; and another 600 feet; all dry wells, and each affording gas.
10. Sandy, with gravel and boulders.
11. But little.
12. Very low, but water pure; many wells failed entirely.
13. None whatever. General health of community quite as good as usual for season of the year.
14. Quite limited.
15. When used for drinking purposes, filtered before using.
16. Walled with brick, and cemented.
17. None.
18. No more than usual for time of year; principally malarial and gastro-intestinal.

Disposal of Sewage.

1. One-half mile for water drainage only.
2. None.
4. Half of it three feet deep, and four feet wide, walled with stone; the other half two feet sewer pipe.
5. None.
6. Into Seven-mile Creek.
7. None.
8. On every lot.
9. Four by five feet in width; five to twelve feet in depth.
10. Only walled with stone, or curbed with timbers.
11. By Board of Health.
12. Scarcely any; I know of none.
13. Some by sinks; others cast them into the alleys to decay, or be carted away when ordered by council.

Our water is remarkably pure and locality healthful, and epidemics rare. Inhabitants about 1,000.

EATON—Population 3,000.

REPLIES BY W. A. CAMPBELL, M. D.

Water Supply.

2. Wells.
2. None in use, nor contemplated.
6. Almost exclusively.
7. Dug and walled, but few driven.
8. Twelve to thirty-five feet.
9. No artesian well in Eaton. About one-half mile out of town there are several artesian or flowing wells. The water is struck at a depth of sixteen to twenty feet; raises three feet above ground.
10. Clay and gravel in the greater part. In the lower part of town wells have solid rock bottoms.
11. Privy vaults are numerous within 40 to to 150 feet; and the wells are very liable to infection.
12. All the shallow wells were dry. Those thirty to thirty-five feet did not give out.
13. In the section of town where the wells were dry there were quite a number of cases of typhoid fever. Mild form of dysentery was prevalent throughout the town.
14. Perhaps one family in ten use cisterns.
15. Some are filtered; others not; generally filtered before storing.
16. Cisterns are usually constructed under ground, with brick walls and cement linings.
17. I have.
18. It was of a dysenteric type, and usually lasted from seven to ten days. I think about one person out of five had more or less bowel trouble.

Disposal of Sewage.

1. None.
2. None.
8. Exclusively.
9. Vary in size from one to twenty barrels, and from one to twelve feet in depth.
10. No.
11. By ordinance; but it is not generally heeded.
12. Not to exceed two in town.
13. On the surface of the back-yards or garden.

EBENEZER—Population (1880) 2,143.

REPLIES BY HAWLEY & HAWLEY, M. D'S.

Water Supply.

1. Wells.
2. No system in use.
6. Exclusively.
7. Dug wells.
8. Twenty to thirty feet.
9. Have no artesian water.
10. It varies. In some places we find the soil of a black alluvial character; while in others, and indeed in the majority of places, it is of a heavier clayey character.
11. They are very liable to contamination, because scarcely a single privy is more than from sixty to eighty feet from the well, and in place of a vault, the excreta are deposited upon the surface, thus making surface contamination very liable.
12. The water was very low, and many wells were perfectly dry; while some would accum-

PREBLE COUNTY—Continued.

ulate enough during the night to furnish a limited supply for the following day.

13. There was not.
14. Not used at all.
17. None during the last year.

Disposal of Sewage.

1. We have no sewerage.

NEW PARIS—POPULATION 1,200.

REPLIES BY M. E. WILLIAMSON, M. D.

Water Supply.

1. Chief water supply is from common dug wells.
2. No, none contemplated.
6. Universally.
8. Sixteen feet.
9. No artesian wells.
10. Limestone soil, loose, black and very pervious to liquids.
11. Liability to contamination from privy vaults is inconsiderable.
12. Very few wells failed during the drouth.
13. None due to this or any other cause during this time.
14. Very little, if any.
17. None whatever.

Disposal of Sewage.

1. None.
8. Generally.
9. Three by four feet, four feet deep.
10. No; only laid up with stone wall, no lime or mortar.
11. No; each individual utilizes his own for fertilizer on gardens and fields.
12. None.
13. Are consumed by hogs and chickens, which the majority keep.

WEST ELKTON—POPULATION 247.

REPLIES BY A. W. CONARROR, M. D.

Water Supply.

1. From wells.
2. No; this is but a small village.
6. This is the only source of supply.
7. Our wells are dug and walled with stone.
8. From six to twenty feet.
9. There is but one well which overflows, and that is twelve feet deep; yellow sulphur.
10. Clay, with a substratum of sand and gravel, which overlies rock.
11. None worth naming, unless possibly in a few instances, through the above named gravel bed.
12. In many the supply gave out entirely. No chemical examination was made, but the water had the odor of black sulphur, though usually having no odor.
13. None whatever.
14. There is none in use for drinking water.
16. With walls of brick and cement.
17. No.

Disposal of Sewage.

1. We have no sewers.
8. There are quite a number of vaults, and several privies which stand on the banks of a small stream.
9. Four by five by five feet deep.
10. No; some are cased with boards and some have no casing.
11. Board of health cause those to be emptied that have no vaults.
12. I suppose all come under this head.
13. Night soil in privies; kitchen garbage and house slops are fed to swine.

WEST MANCHESTER—POPULATION 500.

REPLIES BY J. E. HORN, M. D.

1. From wells, both dug and drove wells.
2. No system of water works, nor are any contemplated.
7. Dug, drove, and some bored.
8. Usually shallow, about twelve to fifteen feet.
9. We have no artesian well in this neighborhood, none nearer than eleven miles; I do not know the chemical properties of that.
10. The soil is low ground, black, loose on top, with a sort of blue clay under it, at a depth of three or four feet; under the clay comes a bed of gravel.

The most of the wells are not very far from privy vaults, not more than twenty-five to fifty feet away, in most cases.

12. Many were dry; the drove wells all held out, but dug wells, all but five or six, were dry; two or three of the latter, however, had several feet of water in them to the last.
13. Could not trace any sickness to this cause, indeed, the town has not been healthier for nine years than during the past summer.
14. Not at all.
17. I think I have.
18. Four and five years ago the village had epidemics of typhoid fever of rather a mild type, but some of it was pretty severe; there must have been, during those two seasons, 150 cases in this vicinity. I rather attributed that sickness to the shallowness of the wells, which were easily contaminated by the privies so close to them.

Disposal of Sewage.

1. We have no sewer system.
8. There are but few real vaults; most privies are built on top of ground, and the waste water dropped on top of ground and left exposed to sun and air.
9. There are a few about from five to eight feet in depth, two by four feet other dimensions.
10. There are none of them cemented, to my knowledge.
11. Are not; we have no board of health in the town or hamlet.
12. Are none.
13. Night-soil usually thrown into privy; garbage, slops, etc., either given to pigs or thrown on top of ground somewhere around the house.

It seems to me that the water cannot help but be polluted by filth from privies and other sources. The wells being so shallow, and the privies so near, and so many of the latter have been in use so long that the soil must be saturated for a good distance around. The general surface of the soil is pretty level, and drainage not very good, and it must gradually soak away; all filth must enter the soil.

WEST SONORA—POPULATION 200.

REPLIES BY C. SURFACE, M.D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. Dug wells chiefly.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

PREBLE COUNTY—Continued.

8. From twenty to twenty-five feet.
9. Have no artesian well.
10. Clay and loam with gravel twenty or twenty-five feet from surface.
11. Privy vaults usually about two hundred feet from well.
12. Water very low, but good.
13. No; health unusually good.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. Nearly all use them.
9. From three to five feet.
10. No.
11. No.
12. None.
13. No especial method.

PUTNAM COUNTY.

FORT JENNINGS—POPULATION 250.

REPLIES BY ADOLPH STEINHOFF, M.D.

Water Supply.

1. Wells and cisterns.
2. There is none, and none contemplated.
6. It is altogether used.
7. Stone wells.
8. Twenty-four feet.
9. There are no artesian wells.
10. Clay ground.
11. I did not notice any bad effect.
12. They were generally pretty low.
13. No.
14. Not used for that purpose.
17. No.

Disposal of Sewage.

1. About half a mile.
2. About half a dozen.
4. Eight-inch tile.
5. Four-inch tile.
6. Into the Auglaize river.
7. No.
8. Everybody has one.
9. Four feet deep.
10. No.
11. No.
12. They are not used.
13. They are thrown into the yard.

LEIPSIC—POPULATION 1,800.

REPLIES BY H. B. B. MONTGOMERY, M.D.

Water Supply.

1. Wells.
2. None.
6. Altogether.
7. Tubular.
8. Twenty feet.
9. None.
10. Loam.
11. None.
12. Very low.
13. Typhoid fever.
14. Not any.
17. I have.
18. Typhoid fever.

Disposal of Sewage.

1. None.

MILLER CITY—POPULATION 350.

REPLIES BY LEWIS E. DEUBLE, M. D.

Water Supply.

1. From cisterns and wells.
7. Dug, lined with board or curbing, and some tubular.
8. From 40 to 65 feet.
9. From 400 to 600 feet, and is black sulphur.
10. It is of a black muck, and also what we call jack-wax.
12. Good, but cloudy and rather low.
13. Not very often.
14. About one-fourth.
15. After storing.
16. Of brick, and cemented either on the inside or outside, with a center wall.
17. I have, but not very often.
18. I had three cases of typho-malarial fever from drinking water from shallow wells.

Disposal of Sewage.

1. Do not know; for our sewers are tile and small.
2. None that I know of.
8. Not in use in general.
9. If any, are very shallow, but the most have none.
10. Are not.
11. Are not.
12. None.
13. Are exposed to the air in the back yards, etc.

Some of the inhabitants are very poor and have surface or shallow wells curbed in with plank in the back yard, and those families are always complaining.

WEST LEIPSIC—POPULATION 400.

REPLIES BY W. R. BAKER, M. D.

Water Supply.

1. Wells.
2. There is none, and none contemplated.
6. Entirely, with one or two exceptions, where cistern water is used.
7. Dug wells in the town; bored wells on the flat lands adjacent.
8. In town from 12 to 18 feet.
9. Can not tell, as we have none in this vicinity.
10. In town the wells are all in a sand ridge.
11. I should think they would be liable to contamination, as the vaults are dug in the same kind of loose soil, yet I have not noticed any disease that I could trace directly to this cause.
12. Water was scarce and was low in the wells.
13. Not in this section; in fact there was very little sickness during the summer and fall.
14. I think only about two families use cistern water.
15. It is filtered after storing.
16. Walled with brick and cemented.
17. I have not in the village.

Disposal of Sewage.

1. I think two miles will cover the extent of our sewerage.
4. Eight inches.
5. Four inches.
6. Into open ditches.
7. I can not tell, as the outlet is some twenty miles distant.

PUTNAM COUNTY.—Continued.

8. They are used by all, or nearly all, the village.
9. About 5 feet deep, 4 feet long, and 2 feet wide.
10. Never that I have heard of.
11. No.
12. None.
13, Night-soil is usually thrown into the privy vaults; the kitchen garbage, etc., are thrown upon the ground.

RICHLAND COUNTY.

BELLEVILLE—POPULATION 1,000.

REPLIES BY S. P. DYER, M. D,

Water Supply.

1. Wells.
2. No.
6. It is the principal water used.
7. Dug and drove and drilled.
8. 35 feet.
10. Clay, gravel and sand.
11. I don't know; our wells are not injured by privies; it is surface water here.
12. Good.
13. No.
14. Very limited.
16. Bricked and cemented.
17. No.
18. None from water.

Disposal of Sewage.

8. General use.
9. 4 by 4; depth, 8 feet.
10. No.
11. No.
13. Fed to hogs.

INDEPENDENCE—POPULATION 600.

REPLIES BY O. A. HUBBS, M.D.

Water Supply.

1. Wells.
2. None.
6. Exclusively.
7. Dug, drilled and driven.
8. Eighteen to one hundred and eight feet.
10. Gravel, rock and clay.
11. None.
12. All dry except drilled wells, which are from sixty to one hundred and eight feet deep.
13. No.
14. None.
16. Stone and brick, cemented with water lime.
17. No.

Disposal of Sewage.

1. None.
12. Altogether.
13. Thrown into the street and back yard.

LEXINGTON—POPULATION 550.

REPLIES BY H. H. SMITH, M.D.

Water Supply.

1. Wells and cisterns.
2. None.
7. Wells are dug and walled with stone with the old oaken bucket.
8. Thirty to sixty feet.
9. Don't know; have none.
10. Sand rock.
11. Very little.
12. The water was low, but pure.
13. There has been no sickness here.
14. Very little.
15. Yes; before storing; through brick.
16. Walled with brick, and plastered with water lime.
17. No.

Disposal of Sewage.

1. We have no use for sewerage.
8. Exclusively.
9. One hundred and twenty-five cubic feet capacity.
10. No.
11. No.
12. None to my knowledge.
13. It is usually thrown in back yard.

We are not likely to have trouble here from water, but are in my opinion more likely to suffer from surface filth.

ONTARIO—POPULATION 200.

REPLIES BY J. S. STEWART, M.D.

Water Supply.

1. Wells and cisterns.
2. None.
6. Most altogether.
7. We have ordinary stone walled wells and some driven wells.
8. Twenty to fifty feet.
9. North of village there are two artesian wells; water struck at about thirty feet, but wells drilled to ninety. These supply Crestline with pure, soft water in abundance.
10. After going through the usual vein of yellow clay we have tough blue clay, twenty to thirty feet; then a vein of gravel, two feet thick, then blue clay.
11. Lots here are 60x120; residences, barns, and privy vaults are situated on said lots in many cases. In my own property no contamination can take place on account of natural drainage. In general, water here is very good and pure.
12. Many wells and water-ways went dry; no diminution however in artesian wells.
13. During August and September we had quite a considerable number of cases of gastro-intestinal irritation and diarrhœa.
14. Not to exceed five per cent.
15. No; in some, surface water enters.
16. Of brick, arched and cemented.
17. Yes; a very few, however.

Disposal of Sewage.

1. None.
8. Wholly.
9. Four by four by six.
10. No.
11. No.
12. Not at all.
13. Usually thrown on the lot.

PLYMOUTH—POPULATION 1,200.

REPLIES BY W. H. SYKES, M. D.

Water Supply.

1. Wells.
2. Neither.
6. Exclusively, or nearly so.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

RICHLAND COUNTY—Continued.

7. Dug wells.
8. From twenty to forty feet.
9. None found: within the last year three wells were sunk for gas to the depth of 500, 900, 3,200 feet respectively, without obtaining flowing water or gas.
10. Clay loam soil; sub-soil generally clay.
11. As a rule, care has been observed not to permit contamination.
12. A few went dry, most of these were not to exceed twenty feet in depth.
13. No; our town has been remarkably exempt from sickness the past summer and fall.
14. Very little.
17. No.

Disposal of Sewage.

1. None.
8. Pretty generally; a few use boxes.
9. About five feet.
10. No.
11. The board of health gives them a general supervision.
12. Not used.
13. The board of health tries to have them either deposited in the manure pile or dug under ground in the garden.

SHELBY—Population 2,500.

REPLIES BY M. H. HUSS, M. D.

Water Supply.

1. Almost every dwelling house receives its supplies from a separate well and cistern.
2. There is none, and none contemplated.
3. (*d*) Above, Ontario; below, Ganges.
6. Almost altogether.
7. Almost all dug wells, only a few springs.
8. From ten to thirty feet.
9. There are none.
10. Clay and gravel.
11. With only few exceptions; they are all more or less quite a distance from those.
12. About two-thirds of the wells were dry.
13. There were several cases of acute pneumonia, but I have accused the continual high temperature more than the low water.
14. Hardly any.
15 It is generally filtered before storing, if brick cistern, wooden cistern water is not filtered at all.
17. No.

ROSS COUNTY.

ADELPHIA—Population 700.

REPLIES BY N. POTTER, M. D.

Water Supply.

1. Wells.
6. Exclusively.
7. Walled, with pump.
8. Fifteen to forty feet.
10. Blue clay, gravel.
11. Some are liable to be contaminated from proximity to privy vaults.
12. Water very low, some entirely dry.
13. Typhoid fever.
14. Very little.
15. Yes.
16. Under ground, and water light.
17. Uncertain.
18. Dysentery and typhoid fever to an unusual extent.

Disposal of Sewage.

8. Generally.
9. Three to ten feet.
10. No.
11. No.
13. Thrown in back yard and privy vault.

An old grave yard, yet used for the purpose of interment, situated near and above the town, I believe to be the source of contamination of well waters.

CHILLICOTHE—Population 14,000.

REPLIES BY THOS. S. BARNES, M. D.

Water Supply.

1. Water-works.
3. Taken from well about three hundred feet from Scioto River. (*c*) Excellent. (*d*) Above, Kingston, nine miles; below, Sheronville, thirteen miles, and Waverly seventeen miles.
4. (*a*) About one-fourth mile north. (*b*) Capacity of reservoir three and one-half millions; bottom grouted, sides bricked and backed with clay puddle. (*c*) Filtered through three hundred feet of gravel.
5. One-half to three-fourths million.
6. About two-thirds.
7. Drove and dug
8. Thirty-five to forty-five feet.
9. About six hundred and eight feet; analysis, sulphureted hydrogen 2.555; chloride of potassium, 3.689; chloride of sodium, 67.655; chloride magnesium, 20.783; chloride calcium, 4.935; sulphate of lime, 5.523; carbonate of lime 21.595; flow, strong.
10. About seven feet of soil, then gravel.
11. The gravel as a natural filter the only prevention.
12. But little complaint.
13. There was not, but think some typhoid and diphtheria could be traced to impure well water, but no positive proof.
14. Moderately.
15. Generally filtered; about equally, before and after storing.
16. Walled with brick and cemented.
17. Think I have, but no positive proof.
18. Typhoid fever, diphtheria and scarlet fever; have no means by which to estimate, as no reports are to be had.

Disposal of Sewage.

1. None.
8. Gene al.
9. Four by eight, and six to thirty feet deep.
10. No, only very few.
11. It is not.
12. Not used.
13. Ash piles, alleys and sinks.

The water furnished by the water-works is excellent, and it is a subject of remark that the health is much better since they have been established. Could the water supply be controlled by a board of health there would be nothing to fear from our water.

CLARKSBURGH—Population 600.

REPLIES BY J. M. MATTHEWS, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Exclusively for drinking and cooking.
7. Wells walled with stone or brick.
8. Eighteen to twenty-five feet.
10. Clay and gravel.
11. None at all, I think.
12. A good many dry, and most of the remainder low.
13. No, very healthy.

ROSS COUNTY—Continued.

14. None that I know of.
15. Walled with brick and cemented.
17. None here.
18. Some malarial, and a few isolated cases of typhoid fever.

Disposal of Sewage.

8. None.
11. No.
12. Exclusively.
13. But little attention paid to them.

As the past drouth was extreme, and health good, we cannot see how disease is likely to be conveyed here by low water or drouth.

GILLESPIEVILLE—POPULATION 300.

REPLIES BY J. M. WILTSHIRE, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost exclusively.
7. The wells are dug, and walled with stone or brick.
8. Twenty eight to thirty feet.
9. No artesian well.
10. Clay, gravel and sand.
11. Privy usually placed at a safe distance.
12. Water was low, but continued of good quality.
13. No.
14. But few use cistern water.
15. Rarely filtered.
16. Walled with brick and cemented.
17. No.

Disposal of Sewage.

8. In general use.
9. Four to six feet.
10. Rarely.
11. No.
12. Not used.

HALLSVILLE—POPULATION 291.

REPLIES BY WM. C. GILDERSLEEVE, M. D.

Water Supply.

1. Wells.
2. Have none.
6. Nearly every house.
7. Common.
8. From eighteen to sixty feet.
10. Sandy.
11. No proximity to privies.
12. Most of them had water, but low, and some of them were dirty.
13. Not any.
14. Very little.
15. None filtered.
16. Walled with brick and mortar, then cemented with cistern cement.
17. Have not.

Disposal of Sewage.

13. Putting them in the stable yard, on the garden or in the privy.

YELLOW BUD—POPULATION 200.

REPLIES BY W. F. HUGHEY, M. D.

Water Supply.

1. Wells in every case.
2. No.
7. Some have the patent drove well; others ordinary open wells.
8. Twelve to fifty feet.
10. Such as is usually on water courses—gravel beginning from one to four feet below the surface.
11. None at all, we think.
12. The most of them showed no signs of failure, as they are on a level with bed of river and creek.
13. No; we always have a great deal of malaria; we had an unusual amount of it the latter part of fall, supposed to be due to the excessive drouth.
17. No, we think not.

Disposal of Sewage.

1. No sewerage.
8. Our privies are dug down into the ground, and are not a source of harm.
9. Six to eight feet.
10. No.
11. Need no emptying.
12. None in use.
13. Kitchen garbage is fed to the hogs.

SANDUSKY COUNTY.

FREMONT—POPULATION 10,000.

REPLIES BY J. D. BEMIS, M. D.

Water Supply.

1. Spring water from gravel strata.
2. Yes.
3. (*c*) As near wholesome as possible to obtain; free from sulphur.
4. (*a*) Within corporate limits south, near bank of Sandusky River. (*b*) Reservoir; rock bottom, sides stoned; water filters into reservoir through gravel strata overlying the rock.
5. 200,000 gallons.
6. Few wells in outskirts of city.
7. Driven and drilled. But few wells have been dug in the past ten years.
8. 10, 15 and 60 feet.
9. None found here; at least a depth of 2,000 feet has been reached in drilling for natural gas without finding it.
10. Sand, clay and gravel.
11. Can not say.
12. Usually dry.
13. No; water-works water universally used at that season of year.
14. I think very limited.
15. After.
16. Wood, with outside coating of coal tar.
17. No.

Disposal of Sewage.

1. 4 miles.
2. 800.
3. Through catch-basins.
4. 12 to 26 inches.
5. 6 to 10 inches.
6. Into Sandusky River.
7. No.
8. 75 per cent.; balance have sewer connections.
9. $3\frac{1}{2}$ by 4 by 6 feet.
10. About one-half are.
11. No.
12. About 100 in city.
13. Night-soil hauled away at night and deposited on farm lands; garbage collected regularly for swine.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

SCIOTO COUNTY.

BUENA VISTA—POPULATION 500.

REPLIES BY JAMES S. FRIZELL, M. D.

Water Supply.

1. Cisterns, wells, Ohio River and Twin Creek.
2. No; none is contemplated.
6. About one-third.
7. Dug wells walled with stone and driven wells.
8. About 60 feet.
9. No artesian wells are used.
10. Clay on top; gravel, drift, sand, slate.
11. Not liable to privy contamination.
12. All were very low; many of them went dry. They rise and fall with the river.
13. No.
14. About one-half.
15. Not generally; water is filtered before entering cistern.
16. Dug in the clay soil, and either cemented on the clay or walled with brick and cemented.
17. No.

Disposal of Sewage.

1. None.
8. Altogether.
9. 8 by 6 feet and 6 or 7 feet deep.
10. No.
11. No.
12. Not at all.
13. Garbage and slops are fed to swine; other filth either thrown on the gardens or into the privy vaults.

LUCASVILLE—POPULATION 350.

REPLIES BY J. B. WARWICK, M. D.

Water Supply.

1. From wells and cisterns.
2. None in use and none contemplated.
6. Used almost exclusively for drinking purposes.
7. Walled with brick or stone; dug into the earth in width 5 feet.
8. Average depth 45 feet.
9. Artesian water is found at a depth of 1,400 feet, contains sulphates and carbonates of soda, lime and magnesia, a large per cent. of chloride of sodium; also chlorides of calcium and magnesia; extent of flow 6-inch pipe.
10. First eight feet clay, then sand and gravel.
11. No vaults from privy or cess-pools near our village wells.
12. These wells very low and some few were dry.
13. No.
14. Majority use for drinking purposes in winter.
15. Not filtered.
16. Walls of brick and then cemented.
17. Yes.
18. We had more typhoid fever during 1887 than in former years; disarrhœa, stomach trouble, acute gastritis, a large per cent.

Disposal of Sewage.

1. None.
8. All have shallow vaults.
9. 10 feet.
10. No.
11. No regulation.
13. Given to hogs and thrown out on ground.

The Scioto Valley had good water during the past drouth, as our water supply came from the Scioto River. The wells are dug to a level of river bed. Four or five miles east and west of the Scioto River water was scarce and impure. Here we found fevers, diarrhœa, etc., caused from said impure water.

PORTSMOUTH—POPULATION 15,000.

REPLIES BY C. C. FULTON, M. D., H. O.

Water Supply.

1. Water works and cisterns.
2. Holly plan.
3. (*a*) Ohio River. (*b*) Don't know. (*c*) Generally good; sometimes very muddy. (*d*) Greenup, Ky., sixteen miles; Ironton, 30 miles; Sciotoville, six miles.
4. (*a*) Inside city limits, at upper end. (*b*) Pumped direct from river. (*c*) No filterage, etc.
5. About two million gallons.
6. About eight-tenths of the people use it.
7. None; well water bad.
9. Don't know.
14. Almost two-tenths.
15. No.
16. Of brick, and cemented.
17. Yes.
18. During a very low stage of water there has been some cases of typhoid fever that I think came from impure water.

Disposal of Sewage.

1. Don't know.
2. Not many.
3. By grates and openings at street crossings.
4. Don't know; there are three main sewers.
6. Into the Ohio River, below the water works.
7. To some extent.
8. General throughout the city.
9. From three to four feet in width, and thirty to forty feet to gravel and sand.
10. No; simply bricked up.
11. Yes.
12. None in use
13. Carted to the dumps by garbage contractors.

SCIOTOVILLE—POPULATION 1,200.

REPLIES BY F. M. STEWART, M. D.

Water Supply.

1. Cisterns, Ohio River, and wells in the order named.
2. No; and none contemplated.
3. (*a*) As above stated. (*c*) It is probably the purest supply here, as little of the cistern water is filtered. (*d*) Portsmouth, seven miles above.
9. Cannot say, as we have none here.
12. I know of but few wells here. All, so far as I am informed, were nearly or quite dry, probably supplying one family.
13. There have been, or was, quite a number of typhoid fever cases about this time.
14. Principally, I should say,
15. Very few use any means of filtering; before.
16. With brick and cement; some are puddled.
17. No.

Disposal of Sewage.

1. None.
2. None.
10. No.
11. No.

I have been here but seven months. The greatest irregularity here, it appeared to me, is in permitting the water to run into nearly, or quite, empty cisterns during the summer without filtering, and using it for drinking water; however, I have seen no bad results from it.

SENECA COUNTY.

ALVADA—POPULATION 100.

REPLIES BY A. M. MAGERS, M. D.

Water Supply.

1. Wells and cisterns.
2. No; none contemplated.
6. With but few exceptions.
7. About one-half are drove; balance, open wells.
8. Seventy-five to one hundred feet.
9. No artesian wells.
10. East, clay; west, clay and sand.
11. To a great extent. I know of several instances where privies are not more than forty feet from well.
12. Very low; some were perfectly dry.
13. A form of typhoid, with mild symptoms. Upon inquiry, I learn that wells were almost dry in about every instance.
14. By very few.
15. Not filtered.
16. Generally of plank and hollow sycamore.
17. I have.
18. Typhoid and intermittent fevers.

Disposal of Sewage.

13. Usually thrown in back-yards.

ATWATER STATION—POPULATION 220.

REPLIES BY C. S. HIDDLESON, M. D.

Water Supply.

1. Wells and cisterns.
2. No.
6. Perhaps a little more than cistern water.
7. Usually walled with stone, a few are tiled.
8. About thirty feet.
10. Clay.
11. As a rule, are not liable to such contamination in this soil.
12. Majority were entirely dry.
13. No.
14. Nearly, if not quite, as much as wells.
15. Yes, before storing.
16. Walled up with brick, and cemented.
17. Not certain.

Disposal of Sewage.

13. Carried quite a distance from the house and emptied, as a rule.

KANSAS—POPULATION 350.

REPLIES BY D. E. BOWMAN, M. D.

Water Supply.

1. Wells, drilled into the rock.
2. No; none is contemplated.
7. Wells, drilled into the rock.
8. Twenty or twenty-five feet.
10. Limestone rock.
11. To the same extent that they are in all small towns, though privy vaults are not deep, perhaps three to five feet, and in the back part of the yard, thirty feet from house.
12. Very low.
13. None at all; not a single case of typhoid fever.
14. Not at all.
17. None since I have been here.

Disposal of Sewage.

13. I believe generally thrown into back yard or privy.

NEW RIEGEL—POPULATION 500.

REPLIES BY WM. H. FOCHT, M.D.

Water Supply.

1. Wells and cisterns.
2. None in use, and none in contemplation.
6. Used almost exclusively.
7. Wells are dug until spring water is reached.
8. Forty to sixty feet.
9. What are known as artesian wells here are those which are driven to the depth of seventy to ninety feet upon solid rock, and then drilled through the rock; water is lime water, not so very hard; do not know extent of flow.
10. Clay and sand.
11. Few wells as far as I know are directly liable to contamination from privy-vaults, etc., as we had but a few cases of typhoid fever, and other contagious diseases.
12. All very low, and some of them entirely dry.
13. There was not.
14. Used in a few cases.
15. Is not filtered.
16. Brick and cement, and pine planks.
17. No.

Disposal of Sewage.

1. None.
8. Used without exception.
9. Four to eight feet.
10. No.
11. No.
12. None.
13. Emptied in water closets mostly; most of the house-slops and kitchen-garbage is fed to the swine.

REPUBLIC—POPULATION 800.

REPLIES BY H. K. SPOONER, M.D.

Water Supply.

1. Cisterns and wells.
2. None.
6. One-tenth.
7. Stoned wells.
8. Fifty to sixty feet.
9. None.
10. Clay loam.
11. About as other villages.
12. All exhausted but one well, 52 feet deep.
13. None.
14. Nine-tenths.
15. No.
16. Brick and cement.
17. Not positively.
18. Mild typhoid fever; one death in thirty cases.

Disposal of Sewage.

1. None.
8. Nothing but these in use.
9. Two by four feet and three to four feet deep.
10. No.
11. No.
12. Dry earth or ashes are universally used.
13. Burning and burying.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

SENECA COUNTY—Continued.

TIFFIN—POPULATION 11,000.

REPLIES BY H. J. BRICKER, M.D.

Water Supply.

1. Canal.
2. Yes.
3. (*a*) Sandusky. (*b*) Varies from three to eight miles per hour; three hundred and fifty feet wide where the supply is taken from. (*c*) Good.
4. (*a*) One and one-quarter miles. (*b*) None. (*c*) Through wells.
5. Will average 800,000 gallons.
6. Used very largely; more than it should be.
7. Stone and brick wells.
8. They vary from twenty to forty feet.
9. None.
10. Clay and limestone rock.
11. To a considerable extent; probably few escape its influence.
12. Very low; many dry.
13. Considerable typhoid fever; not epidemic.
14. Considerable cistern water is used, but not filtered.
16. Brick, in all shapes.
17. In many cases it is so supposed.

Disposal of Sewage.

1. Probably four miles.
2. About one hundred to closets, but a large number are connected to cellars.
3. Very poorly; the only ventilation is through the laterals along the street.
4. Five-foot brick arch.
5. From ten to twenty-four inches.
6. Into the river below the city.
7. Yes; considerable trouble; in fact, a nuisance.
8. They are used considerably more than they ought to be; they should all be closed up.
9. They vary from five to twelve feet.
10. No.
11. No.
12. Very little.
13. Emptied and hauled away.

It is not liable to any; it is very good.

SHELBY COUNTY.

ANNA—POPULATION 600.

REPLIES BY E. A. STEELEY, M. D.

Water Supply.

1. Wells.
2. No.
5. Sufficient for domestic use.
6. Drinking and cooking; also for steam boilers.
7. Dug, and walled with stone or brick; a few driven and tubed.
8. Various—ten to ninety feet.
9. None; even at five hundred feet.
10. Drift clay.
11. Not liable, except one or two from surface drainage in low ground.
12. Scant of water only.
13. No.
14. None used.
17. No.

Disposal of Sewage.

1. None.
8. Universal.
9. Four to six feet square, and six to eight feet deep.
10. No; wooden curbs.
11. No.
12. Not used.
13. No method in particular.

Some annoyance from pollution of roofs by sparrows.

BOTKINS—POPULATION 500.

REPLIES BY G. M. TATE, M. D.

Water Supply.

1. The only source of water used in this village is wells, mostly ordinary, open wells.
7. The common open wells; bored wells, walled with sewer tile, and driven.
8. From twenty to forty feet.
9. Artesian water has not been reached.
10. The soil is clayey.
11. One-half of them or over do not exceed in distance from privies one hundred feet.
12. Most of them had but little water.
13. Typhoid fever was more prevalent than usual, though the cases were not numerous, the ratio not greater than in the country, and its source obscure.
14. Not used.
17. None that could be confidently so attributed.

Disposal of Sewage.

1. No sewers.
8. Almost all have privy vaults.
9. Five by four, and six feet deep.
10. No.
11. No.
12. Not used.
13. Thrown either in privy or back-yard.

MAPLEWOOD—POPULATION 130.

REPLIES BY J. D. WISE, M. D.

Water Supply.

1. From dug wells and drove wells.
2. There is not, nor any contemplated.
8. From fifteen to fifty feet.
9. There are no artesian wells.
10. They are situated in rather low, black soil.
11. About one-half of them are liable to contamination from the proximity of privy vaults.
12. A great many of them were dry.
13. There was none this last fall, but in the fall of 1882 I treated thirteen cases of typhoid fever, all of them living in two houses and using water out of one well.
14. No cistern water used for drinking purposes.
17. I have.
18. Typhoid fever, of which I made mention in question 13.

Disposal of Sewage.

1. None.
11. No.
12. There is none.
13. Most any way to get rid of it; some have underdrains to carry it away.

SHELBY COUNTY—Continued.

PEMBERTON—Population 250.

REPLIES BY S. W. SIMMONS, M. D.

Water Supply.

1. Our town is small, two hundred and fifty inhabitants. We use well water, with one exception.
2. No prospect.
7. Old-fashioned dug and bored wells.
8. Average fourteen feet.
10. We have yellow clay, with a light coating of loam; the water is found in quick sand.
11. Not to a great extent.
12. Many of the wells failed entirely.
13. We had quite a number of cases of typhoid fever.
14. One family.
15. Not filtered.
16. Of brick.
17. Yes; one family.
18. They used water from a well; two of the family were sick with fever; stopped using water and fever abated.

Disposal of Sewage.

8. In general use.
9. Average four feet long, three feet wide, four feet deep.
10. No; some of them lined with two-inch boards.
11. No; allowed to fill and then move to a new site.
13. Night soil thrown in vaults; garbage and slops either to the hogs or in the back yard.

PORT JEFFERSON—Population 500.

EEPLIES BY S. S. CRUMBAUGH, M. D.

Water Supply.

1. Wells.
2. None.
6. Wells we use in all cases.
7. Dug and drove wells.
8. From fourteen to thirty feet.
9. We have none.
10. Gravel.
11. It is owing to the position; water shed runs in a gradual slope to the river.
12. Those dug or driven to the bed of water did not fail.
13. No.
14. Not at all.
17. None.

Disposal of Sewage.

1. Not more than 200 yards.
6. In the Miami river.
7. None whatever.
8. About one-half.
9. Six feet.
10. Some, but most are not.
11. By ordinance.
12. None.
13. Kitchen and house garbage are generally fed to hogs.

SIDNEY—Population 3,823.

REPLIES BY C. E. JOHNSTON, M. D.

Water Supply.

1. The supply of water for domestic purposes is from wells.
2. There is a system of water works for fire purposes; a new system, with water for domestic use, is in contemplation.
3. (*a*) The water works are supplied by Mosquito creek. (*b*) This stream varies with the season, becoming quite small in dry weather. (*c*) The water from the creek is not good, and is seldom used for cooking or drinking. (*d*) On the Miami river; Port Jefferson five miles above; Piqua twelve miles below.
4. (*a*) Entirely out of town, but water not used for drinking. (*b*) A small reservoir is used. (*c*) None.
6. Almost wholly.
7. Mostly dug wells, walled with stone or brick.
8. About thirty feet.
9. One hundred and seventy-five feet; chemical properties not known; the supply is quite extensive.
10. Our town is underlaid with gravel, and water is found in it except on the hills, where it is found in blue clay.
11. To a very great extent indeed.
12. The majority of the wells were not affected by the drouth.
13. There were several cases of typhoid fever, but, on the whole, there was not an unusual amount of sickness.
14. Very seldom used.
15. Not generally.
16. They are usually oval in form; walled with brick and plastered with cement.
17. In a few cases it has been traced to that cause.
18. Typhoid fever occurred in several families in one part of town, all of which used water from some well.

Disposal of Sewage.

1. None except a few private ones, the court house and one public school building.
6. Into Miami river.
7. No.
8. Almost entirely; our largest school building and court house have sewers.
9. Usually rectangular; about three by six feet, and about six by eight feet deep.
10. No.
11. Yes; but the ordinance is seldom enforced, except in extreme cases.
12. Not used. Smead's dry closet system in two school buildings.
13. It is usually deposited into cess-pools or thrown upon the ground; from public houses it is hauled away by garbage collectors.

STARK COUNTY.

ALLIANCE—Population 4,636.

REPLIES BY P. W. WELKER, M.D.

Water Supply.

1. Wells and water-works.
2. Yes.
3. (*a*) Mahoning river. (*b*) It is a creek but goes by the name of river; it is small except in freshets. (*c*) Very good; the best if all the sewerage of town emptied below the works.
4. (*a*) One mile from public square. (*b*) Yes; their capacity is several million gallons; they are reservoirs, earth bottom and sides. (*c*) Nothing but settling basins.
5. One hundred thousand gallons.
6. By one-half the population.
7. Common, ordinary kind.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

STARK COUNTY—Continued.

8. About twenty feet.
9. Don't know; have none.
10. Slaty and clay.
11. I think the liability is great.
12. A great many dry, and others low.
13. Yes; typhoid fever.
14. None.
17. In my opinion, yes.
18. The most was typhoid fever.

Disposal of Sewage.

1. None to speak of.
6. Nature's sewers discharge above our water-supply.
7. Yes.
8. Entirely.
9. From six feet deep to surface vaults; boxes are used.
10. No.
11. Yes; all but construction.
12. None.
13. Night-soil is hauled outside of corporation; kitchen-garbage burnt and hauled away; house-slops dumped in vaults partly.

The surface drainage of the whole town flows into the dam above the water-works, and necessarily a great amount of filth is carried there, which could be prevented by proper sewerage.

BARRYVILLE—POPULATION 150.

REPLIES BY A. S. SHEETS, M. D.

Water Supply.

1. Wells.
2. None in use; none contemplated.
6. For all purposes.
8. From thirty to fifty feet.
9. There is none here.
10. Blue clay.
11. We have no contamination.
12. The condition of wells good during the drouth.
13. No disease at all in our place during the summer.
14. We do not use it for drinking.
17. Not any.

BEACH CITY—POPULATION 600.

REPLIES BY DAVID CRISE, M. D.

Water Supply.

6. Generally.
7. Drilled.
8. Seventy-five to one hundred feet.
9. No artesian wells.
10. Sand and gravel.
11. Very limited.
12. Good; water plenty.
13. No.
14. Very limited.
15. Filtered before.
16. Arched with brick and cemented.
17. No.

Disposal of Sewage.

8. In general use.
9. Two by eight, and ten feet deep.
10. No.
11. No.
12. Very limited.
13. In sinks and manure heaps.

CANTON—POPULATION 22,000.

REPLIES BY LEW SLUSSER, M. D.

Water Supply.

1. A small lake about two and one-half miles from the city, and the west branch of Nimishillen Creek.
2. We have water-works, constructed in 1869-70.
3. (*b*) The Nimishillen Creek furnishes three times the amount of water used in dry times. (*c*) Water that is good for all purposes, neither very hard nor very soft; mostly spring water. (*d*) There are no towns above us on the stream.
4. (*a*) One pumping station is inside the corporate limits. (*b*) We have what is known as the Holly system; pumps directly into the mains: no reservoir; no stand-pipe. (*c*) No process so far.
5. About eight hundred thousand to one million gallons.
6. Three-fourths or more of all the families in the city use well water.
7. Both the walled and drove-wells.
8. From eighteen to twenty and thirty-five to forty feet.
9. One hundred and twenty feet; has not been analyzed; seventy-five barrels an hour.
10. Bed-rock, slate and sandrock.
11. A large number of our wells are more or less contaminated by seepings from privy vaults and cess-pools.
12. Not effected.
13. None reported.
14. To a very limited extent.
15. Filtered after storing.
16. Walled with brick and plastered with hydraulic cement; in clay soil—the plastering is on the clay.
17. Such have been reported.
18. Diarrhœa, dysentery and typhoid fever have been attributed to the use of contaminated well water; confined to certain localities, and not to any great extent.

Disposal of Sewage.

1. There is about one and one-half mile of storm water sewer.
2. None allowed, but a few are made surreptitiously.
3. By the man-holes.
4. Egg shape, two by three feet.
5. Fourteen inches.
6. Into Shriver's Run, a small spring branch passing through the city.
7. Yes, in a dry season.
8. Universally, with few exceptions.
9. Four by six and eight feet deep.
10. No, either walled with brick or planked.
11. By both, though not carried out by either, except regulations for emptying.
12. Discarded—none in use at present.
13. Night soil is deposited upon land outside the city limits by the odorless excavator; kitchen garbage is burned or deposited in back yards and alleys; slops are thrown upon the surface or run into a cess-pool.

The city supply of hydrant water is drawn from a pond filled with vegetation. This, in a dry summer, taints the water, and gives out an unpleasant odor and taste, though decided sickness from its use has not been manifest.

LAKE—POPULATION 350.

REPLIES BY F. B. RICHARDS, M. D.

Water Supply.

1. Wells.
2. None, and none contemplated.
6. Entirely.
7. Driven wells.
8. Twenty feet, more or less.
9. None ever found.
10. In a gravel bed.
11. Impossible to contaminate the water.
12. Supply not diminished.
13. None.
14. Scarcely any used.
15. No.
16. Cemented against the ground.
17. No.

STARK COUNTY—Continued.

Disposal of Sewage.

8. All use privies.
9. 4 by 6 and 6 feet deep.
10. No.
11. No.
12. Not used.
13. Partly fed to hogs and remainder thrown on surface.

MAPLETON—POPULATION 200.

REPLIES BY WM. JAS. M. CONKEY, M. D.

Water Supply.

1. From deep wells and the sandy creek.
2. No system of water-works, and none contemplated.
6. By the whole town.
7. The old-fashioned deep wells.
8. From 20 to 65 feet.
9. No artesian wells here.
10. Some limestone soil and some in alluvial soil.
11. No liability to impurity from above causes.
12. The wells were nearly all dried up, with exception of my own well, which is a bored well 85 feet deep, and supply can not be exhausted.
13. No diseases in this place prevailed to any extent during dry season but summer and bowel complaints.
14. Used only for washing purposes.
17. I have not.

Disposal of Sewage.

1. No sewers.
8. Every family has one.
9. Usual size—from 6 to 10 feet deep.
10. Not cemented.
11. We have no board of health here; every family attends to its own.
12. Not any in use.
13. Carrying it away to the commons and burying it.

No source of water pollution in this town that I know of.

MIDDLEBRACNH—POPULATION 250.

REPLIES BY B. T. YOHE, M. D.

Water Supply.

1. Wells.
2. None.
3. (*d*) This village is situated on the middle branch of the Nimishillen Creek, near its source, and no towns above to contaminate the water.
6. Exclusively.
7. Some are dug, others driven.
8. 30 feet.
9. No artesian well.
10. Gravel.
11. But little liability, as our town is small and plenty of room.
12. Some wells low; however, no very great scarcity of water.
13. Bowel troubles prevailed, but I did not attribute it to the condition of the wells.
14. None.
17. None that I so considered.

Disposal of Sewage.

1. No sewerage.

OSNABURGH—POPULATION 800.

REPLIES BY JOSHUA WHITELEATHER.

Water Supply.

1. Wells and springs.
2. No water works; but contemplated.
7. Dug.
8. Eighteen to forty feet.
10. Sand rock.
12. Good.
13. None.
14. None; washing only.
17. None.

Disposal of Sewage.

8. Altogether.
9. Four by eight feet in width; depth eight feet.
10. Wood.
11. No.
12. None.
13. Night soil to privy-vaults; kitchen garbage to pigs.

PIERCE—POPULATION 300.

REPLIES BY J. F. FOX, M. D.

Water Supply.

1. Sheet of water twenty feet below bed of town.
6. Entirely.
7. Dug and driven.
8. Twenty to twenty-two feet.
10. Gravely; sheet of water rests on clay.
11. Very slight extent.
12. Many were very low, and some were dry.
14. None at all.
17. A few cases.
18. Two cases of typhoid fever, one of dysentery, and several cases of diarrhœa.

Disposal of Sewage.

1. No sewerage in town.
8. Entirely.
9. About four by six feet, and six feet deep.
10. Are not.
11. No regulation.
12. None in use.
13. Kitchen garbage and house slops are fed to stock mostly. Night soil is thrown in privies, on streets and fields.

WAYNESBURGH—POPULATION 1,000.

REPLIES BY J. M. BYE, M. D.

Water Supply.

1. One large spring.
2. Yes.
3. Water taken from spring by 4-inch pipes.
4. (*a*) within the town. (*b*) Yes; 1,000 barrel. Built in the earth with cement, and within 100 feet of the spring. (*c*) None; none needed.
5. Twenty-five barrels.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

STARK COUNTY—Continued.

6. One-half.
7. Dug and bored.
8. Forty feet.
9. None here.
11. None.
12. But slight failure.
13. No.
14. None.
17. No.
18. None.

Disposal of Sewage.

8. General.
9. Five by six feet, and six feet deep.
10. No; stone wall.
11. Regulated by council.
12. None.
13. Fed to poultry, cow, etc.

We attribute our unusual good health to our good, wholesome water supply.

SUMMIT COUNTY.

AKRON—POPULATION 30,000.

REPLIES BY L. G. EBRIGHT, M. D., H. O.

Water Supply.

1. Lakes.
2. Yes.
3. (*a*) Summit Lake and Maning's Pond. (*c*) Soft.
4. (*a*) Two miles south from center of city. (*c*) No.
5. One million five hundred thousand gallons.
6. Perhaps two-thirds of the people.
7. Dry wells.
8. Thirty feet.
10. Clay; many of them cut in rock.
11. Very few, if any, as special attention has been given the subject during the past year.
12. Many of them were low.
13. No.
14. But little.
15. After storing.
16. Brick, and cemented inside.
17. No.

Disposal of Sewage.

1. Eight and thirty-eight hundredths.
2. Don't know.
4. Six feet.
5. From six to eighteen inches.
6. Cuyahoga River, north of city.
7. No.
8. Nine-tenths of the families use privy vaults.
9. Four and one-half by five feet, and six feet deep.
10. Yes.
11. By both.
12. But little.
13. Night soil disposed of by contract after eleven P. M.; garbage by garbage gatherers.

CUYAHOGA FALLS—POPULATION 3,500.

REPLIES BY W. S. HOUGH, M. D.

Water Supply.

1. Wells.
2. Only for fire.
3. (*a*) Cuyahoga.
6. General.
7. Drilled.
8. Fifty to one hundred feet.
10. Rock.
11. Not much.
12. About same as usual.
13. No.
14. Not used.
17. No.

Disposal of Sewage.

1. No sewerage syetem.
8. General use.
9. Two to eight feet.
10. No.
11. No
12. Not used.
13. As everyone thinks best.

Cuyahoga river flows through town in a gorge from twenty to one hundred feet deep; drainage the very best.

LOYAL OAK—POPULATION 200.

REPLIES BY A. J. WOODS, M. D.

Water Supply.

1. By wells.
2. None.
6. Altogether.
7. Both dug and drilled.
8. Fifteen feet and upwards.
10. Mostly clay.
12. Good.
13. No.
14. None.
17. Yes.
18. Typhoid fever; not a great deal this last fall.

Disposal of Sewage.

1. We have no sewers.
9. Six feet deep, generally.
10. No.
11. No.
12. Altogether.
13. Thrown out on the farms near by.

MOGADORE—POPULATION 600.

REPLIES BY F. J. BAUER, M. D.

Water Supply.

1. Wells and springs.
2. No, not contemplated.
6. Altogether for drinking and cooking purposes.
7. Walled with stone and sewer-pipe, and springs.
8. From ten to fifty feet.
9. There are none here.
10. Gravel, with an underlying clay.
11. A few wells are liable to contamination from privy vaults.
12. Many of them were dry, some are yet.
13. Only one family had typhoid fever; they used spring water, undoubtedly contaminated.
14. None used.
17. Yes.
18. In a family of seven, six had typhoid fever and died.

Disposal of Sewage.

1. None.
8. General.
9. Five to ten feet.
10. No.
11. No.
12. Do not know of any.
13. Night soil thrown into privy vaults; garbage and slops into yard or gardens.

SUMMIT COUNTY—Continued.

NIMISILA.

REPLIES BY A. SISLER, M.D.

Water Supply.

1. Wells and springs.
2. No, and none contemplated.
6. Entirely for drinking and cooking.
8. From twenty to sixty feet.
10. Pretty heavy clay for about twenty feet, then sand rock.
11. I don't think the wells are liable to be contaminated in this heavy clay soil.
12. The most of them had plenty of water.
13. No.
14. Not at all, as far as I know.

Disposal of Sewage.

1. None.
8. Entirely.
9. From six to twelve feet.
10. No
11. No.
12. Very little.
13. Usually thrown out on the surface of the ground, or on the manure pile.

NORTHFIELD—Population 150.

REPLIES BY L. G. M'CONNELL, M.D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. The ordinary walled well.
8. Twenty to thirty feet.
9. Sixty to one hundred feet; water contains lime salts.
10. Clay and sand in different localities within the town.
11. Not to any extent, because care seems to have been used to prevent it by each individual.
12. Very low, and water very scant.
13. It was one of the most healthy periods in the history of the town.
14. Very little.
17. Yes.
18. Diarrhœa and typhoid conditions, I have sometimes charged to the water drank.

Disposal of Sewage.

We have no sewers, but have good natural drainage.

There are no sources above that of the ordinary country village. The town is well supplied with water, usually hard, and generally pure, except for the lime salts.

TRUMBULL COUNTY.

BRACEVILLE—Population 450.

REPLIES BY M. I. HATFIELD, M.D.

Water Supply.

1. Wells.
6. Altogether.
7. Dug wells.
8. From twelve to thirty feet.
10. Clay overlying quick-sand.
11. To no extent.
12. In some localities the water was low and not clear.
14. Not much.
16. Stone and cement.
18. Constipation, jaundice, and the consequences following.

BRISTOLVILLE—Population 2,000.

REPLIES BY A. W. THOMPSON, M. D.

Water Supply.

1. From wells.
2. There is no water-works.
6. Almost exclusively.
7. Mostly dug wells, some drilled.
8. From twenty to forty feet.
9. From forty to sixty feet; mostly hard water, some soft; quite free from any minerals.
10. Sandy, gravelly soil.
11. The same as all wells in country towns.
12. Quite low; the water was scarce; some wells dry.
13. No; there were some cases of fever that were due to bad drinking water, but no great number.
14. Not any, to my knowledge.
17. Yes.
18. There was no great amount of sickess from this source, but have had cases of typhoid from this cause.

Disposal of Sewage.

1. None.
2. None.
8. A good many.
9. Three by six and two to three feet deep.
10. No.
11. No.
12. Not many.
13. By drains; some by natural sources alone—about the worst means possible.

Most of the residences have no system of drainage; throw their slops out regardles of consequences; no precaution taken to prevent the wells from being contaminated.

ORANGEVILLE—Population 400.

REPLIES BY G. W. HAMILTON, M. D.

Water Supply.

1. From wells, though several families get their drinking water from a mineral spring close by.
6. By the majority.
7. Dug to about ten feet, then drilled in the rock to about twenty feet.
10. Gravelly and sandy.
11. Some of them are liable, but the most of them are not.
12. They were nearly all dry.
13. There was not.
14. Not at all.
17. Very rarely.
18. Some typhoid fever, one case fatal.

Disposal of Sewage.

1. None, except a few private drains, emptying into the Pymataning river.
7. No.
8. Almost universally.
9. Three by twelve feet, and ten feet deep.
10. No.
11. No.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

TRUMBULL COUNTY—Continued.

12. Perhaps one-sixth.
13. Mixed with earth and carted onto the farms in the vicinity.

The Pymataniug is a sluggish stream, with a dam in the village, and is contaminated by sewer discharge to some extent.

NEWTON FALLS—Population 1,000.

REPLIES BY C. M. RICE, M. D.

Water Supply.

1. Wells.
6. Entirely.
7. Dug and drilled.
8. Twenty to fifty feet.
9. None.
10. Rock.
11. Small extent.
12. Very low; some dry.
13. No.
14. Very little.
15. Yes, before.
16. Brick and cemented.
17. No.

Disposal of Sewage.

1. None.
2. None.
8. General.
9. Three by four, and perhaps two feet deep.
10. No.
11. No.
12. None.
13. No special mode.

NILES—Population 4,000.

REPLIES BY A. J. LEITCH, M. D.

Water Supply.

1. Wells.
2. None.
6. General.
7. Dug wells.
8. From ten to fifty feet, depends in what part of town.
9. None here.
10. Sand and clay.
11. Think not much; town scattered.
12. A great many dry, and water very poor.
13. Typho-malarial fever in some parts of town when water was the worst.
14. Not much.
15. No.
16. Wood.
17. See question No. 13.
18. Quite healthy just now.

Disposal of Sewage.

1. None.
8. General.
9. From three to eight feet.
10. No.
11. Not much; board does not amount to very much, and has no rules governing them.
12. None
13. Thrown around.

NORTH BLOOMFIELD—Population 100.

REPLIES BY ALMER O. HUNTLEY, M. D.

Water Supply.

1. From wells.
2. No.
6. Almost entirely.
7. Dug wells.
8. Average, twenty feet.
9. None.
10. Clay.
12. Low.
13. No.
14. None.
18. There has been more malarial fever here this fall than usual, but of a mild type.

This is a small country town not incorporated.

WARREN—Population 7,000.

REPLIES BY S. H. SMITH, M. D., H. O.

Water Supply.

1. Shallow wells for drinking water; cisterns and river water for other purposes.
2. We have water-works.
3. (*a*) Mahoning River. (*b*) 10 rods wide and 10 feet deep; current, 6 miles per hour; water would all go through a hole two feet square, with a current of about one mile per hour. (*c*) Contains salts of lime, is quite impure, and is very near the danger line for contamination. (*d*) Leavittsburgh, 4 miles above; Niles, 5 miles below.
4. (*a*) One-half mile from center of city. (*b*) A standpipe of iron two feet in diameter and 140 feet high. (*c*) They pretend to filter through charcoal and stones, but it amounts to nothing.
5. About 135,000 gallons.
6. Almost every house in the city.
7. Mostly shallow; there are about 50 deep wells.
8. Shallow—from 10 to 60 feet.
9. At an average depth of 140 feet; in the south part of town the water will flow about one-half inch stream.
10. Clay.
11. Some are very dangerous.
12. Very good; some few failed.
13. No.
14. A very few families use it.
15. Both.
16. About equally of wood and brick, with cement.
17. Dipththeria in one family.
18. One severe and three mild cases of diphtheria where they were using cistern water, very impure from surface drainage, without filter.

Disposal of Sewage.

1. About 5 miles.
2. About 250.
3. By manholes on the streets and a large ventilating shaft.
4. 40 by 36 inches.
5. None less than 12 inches; average about 16 inches.
6. Into the Mahoning River, right in the center of the city.
7. Yes.
8. Not to more than one-twentieth of the dwellings.
9. They vary.
10. No.
11. It is at present, the ordinance going into effect now.
12. In modified forms quite generally.
13. At present it is buried or put upon the gardens, but a new ordinance requires it removed.

TUSCARAWAS COUNTY.

CANAL DOVER—Population 3,500.

REPLIES BY T. H. BRANNAN, M.D.

Water Supply.

1. Wells.
2. No; none contemplated.
6. Exclusively.
7. Principally dug; a very few driven.
8. Thirty to forty feet.
10. Sand and gravel.
11. Privy-vaults from one hundred to one hundred and fifty feet from wells.
12. Water low, but few dry.
13. No.
14. Not at all.
17. No.

TUSCARAWAS COUNTY—Continued.

18. No prevailing type exists; four cases of typhoid in this place the last season, and one of these was imported from Pittsburgh.

Disposal of Sewage.

1. None.
8. Exclusively.
9. About four by six and eight to ten feet deep.
10. No.
11. No.
12. None.
13. It goes to the hog-pen and alley.

DUNDEE—Population 300.

REPLIES BY CHARLES H. SPRINGER, M.D.

Water Supply.

1. Wells, cisterns, and two large springs.
7. Dug and drilled wells.
8. Fourteen to eighteen feet, and eighty-seven to one hundred and ten feet.
10. Clay over a ledge of rocks, seventy-five feet thick; sandstone.
11. The dug wells are liable to contamination, for they extend only to the rocks, and all foul water does the same, and then runs to the west end of the town where there is a cliff sixty feet high.
12. Dug wells all dry; drilled wells, and the two springs unaffected.
13. None.
14. Not at all; only during this dry season.
15. Not filtered.
16. Of brick and cemented with water lime.
17. Yes.
18. Typhoid fever; a few cases, owing to the excreta filtering from a privy-vault into a surface well.

Disposal of Sewage.

8. Universally.
9. Six by four feet, and three to seven feet deep.
10. No.
11. No.
12. Only one in use
13. No system.

Until quite recently no attention was paid to this matter, but by some instructions on the part of the physicians there is an interest awakened which promises to bear fruit in the future.

MINERAL POINT—Population 1,000.

REPLIES BY C. E. BROTHERS, M.D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. Dug wells.
8. Fifteen to thirty-five feet.
10. Clay.
11. To a small extent.
12. Very low.
13. No.
14. Limited.
15. Yes; before.
16. Brick and cement.
17. No.

Disposal of Sewage.

8. Entirely.
9. Three by two and a half by five.
10. No.
11. Yes.
13. Privy-vaults and alleys.

NEWCOMERSTOWN—Population 926.

REPLIES BY J. R. M'ELROY, M. D.

Water Supply.

1. Wells.
2. No water works; none contemplated.
6. Entirely.
7. Driven.
8. Twenty-four feet.
10. Sandy soil, underlaid with gravel.
11. Liable to contamination from privy vaults.
12. They remained unchanged.
13. No.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. One on almost every lot.
9. Four feet square; eight feet deep.
10. No.
11. No.
12. None.
13. Thrown on the surface of the ground, or into privy vaults.

NEW PHILADELPHIA—Population 5,000.

REPLIES BY J. T. M'LEAN, M. D.

Water Supply.

1. From wells and from the Tuscarawas River.
2. Yes; in use.
3. (*a*) From Tuscarawas River. (*b*) Low water or minimum, 300 feet wide and 4 feet deep; high water or maximum, 700 feet wide and 14 feet deep; about three miles an hour low water, and ten high water. (*c*) Fed from springs; water not perfectly salt; small quantity of lime. (*d*) Canal Dover, three miles above, and Gnadenhutten, eleven miles below.
4. (*a*) From pump-house to town, supply pipe is 1,000 feet long, running north. (*b*) Reservoir east of town; capacity 2,000,000 gallons, constructed of sandstone and fire-clay; situated about one-fourth of a mile from town; elevation 230 feet. (*c*) Filtered by water passing through sand and gravel from river to a well sixteen feet deep, and seventy-five feet distant from river.
5. About 4,000 gallons per day; about 110 families furnished.
6. Well water principally used.
7. Dug and driven wells.
8. About fifty-five feet.
9. Have none.
10. Sand and gravel.
11. Dug-privies on every lot, often in close proximity to wells.
12. Water very low.
13. No.
14. To a very small extent.
15. Generally before and after.
16. Arched with brick, and plastered on gravel.
17. No.

Disposal of Sewage.

1. We have no sewerage, surface drainage only.
8. Universal.
9. Four by six feet; from five to eight feet in depth.
10. No.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

TUSCARAWAS COUNTY—Continued.

11. No.
12. None in use.
13. Privies when filled, are covered with earth, and new ones dug; kitchen garbage and house slops thrown on surface.

RAGERSVILLE—Population 225.

REPLIES BY H. J. PETER, M. D.

Water Supply.

1. Wells.
2. None.
6. Principally.
7. Dug; a few are driven.
8. Twenty to fifty feet.
9. Do not know.
10. Limestone.
11. About sixty feet.
12. Most of them held out well.
13. No.
14. Not any.
16. Dug, and walled with stone and cemented.
17. No.

Disposal of Sewage.

1. None.
8. None.
12. None.
13. Night soil thrown in privy; garbage and slops fed to swine.

SHANESVILLE—Population 500.

REPLIES BY A. T. MILLER, M.D.

Water Supply.

1. Wells.
2. No.
6. Altogether.
7. Dug wells.
8. Twenty-five to forty feet.
9. Not known.
10. Limestone.
11. Might be contaminated by privies.
12. The majority held out well.
13. No; health was good; above the average of former years.
14. By one or two families.
15. After storing.
16. Same as an ordinary cistern with a brick partition to act as a filter.
17. No.
18. The general sickness was with children, diarrhœal in nature, attributed to the heat of August.

Disposal of Sewage.

8. None that I know of.
10. No.
11. No.
12. Altogether.
13. Deposited in privy.

There is nothing that can be traced directly to improper sanitary conditions, as there were very few epidemic or endemic diseases during the last six years.

STRASBURGH—Population 200.

REPLIES BY A. C. GOUDY, M.D.

Water Supply.

1. Wells and cisterns.
2. None in use; none contemplated.
6. Used altogether for cooking purposes.
7. Drove wells, and wells excavated and walled.
8. Twelve to eighteen feet.
9. No artesian wells in this locality to my knowledge.
10. Gravel.
11. There seems to be no trouble in this respect.
12. Water was good, but a little scarce.
13. There was not.
14. Not any.
15. Not filtered.
16. Walled up and cemented.
17. I have not this season.

Disposal of Sewage.

1. No sewers.
8. They are exclusively in use.
9. Five to eight feet.
10. No.
11. No.
12. None in use to my knowledge.
13. Some disposed of in privy-vaults; the latter fed to swine.

UHRICHSVILLE—Population 5,000.

REPLIES BY S. R. THOMPSON, M.D.

Water Supply.

1. Wells.
2. None in use, or contemplated.
6. Used altogether.
8. Twelve to thirty feet.
11. Some wells are so close to privy-vaults that they can hardly help being contaminated.
12. Very low.
13. No.
14. Not at all.
17. No.

Disposal of Sewage.

8. None in use.
9. As deep as you please to make them.
10. No.
11. No.
12. Not in use.
13. Hogs eat it.

UNION COUNTY.

BROADWAY—Population 300.

REPLIES BY J. B. TAYLOR, M. D.

Water Supply.

1. Wells and cisterns.
2. No water-works and none contemplated.
6. About three-fourths.
7. Dug and drove wells.
8. From twenty to sixty feet.
9. No artesian wells in this locality.
10. Some are in clay soil, others in rock and gravel.
11. To a very small extent.
12. Majority of wells were dry; drove wells held out best.
13. No, not during this particular period, but in previous years there has been an increase in amount of sickness.
14. Perhaps one-fourth use cistern water.
15. No.
16. Walled with brick and covered with cement.
17. I believe not.

Disposal of Sewage.

1. None.

UNION COUNTY—Continued.

MARYSVILLE—Population 3,000.

REPLIES BY D. W. HENDERSON, M. D.

Water Supply.

1. Wells, cisterns, and the Marysville mineral spring.
2. No; not even contemplated in the near future.
6. Almost exclusively.
7. Dug and drove wells.
8. Dug wells are usually from sixteen to forty feet.
9. One hundred and forty-six feet; properties, alkaline; flow, about 14,000 barrels in twenty-four hours.
10. Clay, forty-six feet; coarse gravel, sixty; then limestone, two hundred and sixty-nine, followed by sandstone, ninety-eight feet; then; forty of red rock then one thousand two hundred slate, and next fifty-eight feet Trenton rock.
11. The dug wells must, from the nature of things, be liable to a great extent.
12. Very low; Many of them dry.
13. No; owing, I think, to the almost universal use of the water from the artesian well or mineral spring water.
14. But little.
15. It is, when used, and generally filtered before storing.
16 With brick and water-lime cement; some use wooden cisterns.
17. Yes.
18. Mostly typhoid and bowel diseases; where diphtheria and erysipelas prevailed they seem to be intensified and more fatal; the amount of sickness was not more than common for dry seasons, owing to the great majority of wells being entirely dry.

Disposal of Sewage.

1. A little over two.
2. Not any, except the court house and jail.
3. By catch-basins at the corners of each street.
4. Nineteen inches in the inside.
5. From six to fifteen inches.
6. Into Mill Creek and Town Run.
7. Not since the tannery and woolen mills ceased operating.
8. Almost universally.
9. From four to six feet deep.
10. No.
11. No, but directions are given for keeping them clean, etc.
12. I know of but one in use in town.
13. Night-soil is usually emptied into the privy vaults; the garbage and house slops on the ground in back lots.

NEW CALIFORNIA—Population 40.

REPLIES BY W. C. VIGOR, M. D.

Water Supply.

1. We have but one well; depend mostly on cisterns for our supply.
2. None; none contemplated.
7. Have a drove well one hundred and thirty-seven feet deep; have one or two seep wells, from sixty to one hundred and thirty feet, (in the country.)
9. Our town well, one hundred and thirty-seven feet, is strongly impregnated with iron; magnetic to some extent; not used much.
10. A stiff clay soil—what is called black clay, I believe.
12. Throughout the country the greater proportion went dry.
13. It has been unusually healthy here for the last year or fifteen months.
14. Mostly altogether for drinking and house use.
15. It is not filtered as a general thing.
16. Bricked up and not cemented; there are two or three that are cemented.
17. I have not this last season; only been here six months.

Disposal of Sewage.

1. None.
8. Altogether.
9. Four by five or six feet; do not have vaults.
11. No.

I think our water supply at this place is very poor indeed. It is a great wonder that there is not more sickness caused by it.

RAYMOND—Population 175.

REPLIES BY J. N. WRIGHT, M. D.

Water Supply.

1. Wells and cisterns.
2. None.
6. Seventy-five per cent.
7. Dug and drove.
8. Drove, sixty feet.
10. Gravel.
11. But very little.
12. Dug wells, dry; drove wells, plenty of water.
13. None whatever.
14. Twenty-five per cent.
15. It is not.
16. Walled with brick and cemented.
17. None.

UNIONVILLE—Population 300.

REPLIES BY CHAS. M'CUNE, M. D.

Water Supply.

1. Wells.
6. Altogether.
7. Usually dug and walled, and a few drove wells.
8. About twenty-eight feet.
10. Generally in sand and gravel lying under blue clay.
11. About the extent as in all small villages; we have very good surface tile drainage, with good outlet.
12. They have been very low.
13. There were two families that had typhoid fever running through most of the members of the families, commencing after using the water when the wells were very low.
14. I believe there is none in the village.
17. I believe the cause as above stated.
18. There were five cases in all, and appeared immediately after cleaning out the wells this fall and using the water that seeped in shortly after.

Disposal of Sewage.

8. But few.
10. No.
11. There is no sanitary ordinance regulating care of privy.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

VAN WERT COUNTY.

CONVOY—POPULATION 500.

REPLIES BY B. P. CROOKS, M. D.

Water Supply.

1. Wells.
6. Entirely.
7. Dug wells, walled with brick.
8. Twenty feet.
9. One hundred and twenty feet; good flow; limestone.
10. Quick sand.
11. Very liable.
12. Very low.
13. Malarial fever.
14. But little.
16. With brick and cement.
17. Yes.
18. Malarial fever, typhoid fever, and diphtheria.

Disposal of Sewage.

1. Three and one-half.
4. Twelve inches.
5. Four and six inches.
6. In a large, open ditch, one-half mile east of town.
8. All.
9. Three and four feet.
10. No.
11. No.
13. Throwing them in some back alley.

ENTERPRISE—POPULATION 350.

REPLIES BY J. C. HALLER, M. D.

Water Supply.

1. Wells.
2. There is no water works; none contemplated.
6. Exclusively.
7. Dug.
8. From fifty to seventy feet.
10. Black soil.
11. They are too close for health.
12. Empty.
13. Bilious sick stomach.
14. Not used.
15. Both.
16. Made from brick and cement.
17. Yes.
18. The general sickness, where there is a scarcity of water, is bilious.

Disposal of Sewage.

1. One-half mile.
2. None.
3. By a wooden box.
4. Ten inches.
5. There is none.
6. Into a big ditch.
8. To a great extent
9. Two feet wide, four feet deep.
10. No, none of them.
11. Regulated by board of health.
12. Not used.
13. Thrown in the alley.

VINTON COUNTY.

McARTHUR—POPULATION 1,000.

REPLIES BY JNO. E. SYLVESTER, M. D., H. O.

Water Supply.

1. Wells exclusively.
2. Neither.
6. Altogether.
7. The ordinary old-fashioned walled well.
8. 20 to 40 feet.
9. 200 feet: soft water; not analyzed, but quite free from minerals. Flow not measured, but current is gentle, rising 14 inches above the top of well in pipe.
10. Clay soil and gravel on a blue sand-rock in eastern part of town; clay and quicksand in western part of town.
11. They are generally not liable, but in some instances are dangerously near to such sources of contamination.
12. They were generally quite low.
13. No.
14. I know of no cases in the town.
17. Not in my own practice.
18. Several members of a family in the country near here had typho-malarial fever, according to the attending physician. The well was cleaned out and found in a horrible condition. The physician thought this the cause of the sickness.

Disposal of Sewage.

1. None.
8. Probably 90 per cent.
9. 5 by 6 and 4 feet deep.
10. No.
11. Not by standing rule, but occasionally after inspection.
12. None.
13. Night-soil is thrown into privies and slops are emptied on the ground or fed to hogs.

NEW PLYMOUTH—POPULATION 112.

REPLIES BY E. A. FRAMPTON, M. D.

Water Supply.

1. Wells.
2. No.
6. Altogether for cooking and drinking purposes.
7. Ordinary open wells.
8. About 18 feet.
9. No such wells here.
10. Clay, underlaid with heavy sand-rock.
11. To no great extent.
12. Some were dry, others low, while others contained an abundance of water.
13. There was not.
14. Not at all.
17. I have not.

Disposal of Sewage.

1. No sewers.
2. None.
8. To a limited extent; many build their privies so as to have the deposit above ground.
9. About 3 by 6 feet; 5 to 8 feet in depth
10. They are not.
11. They are not.
13. Night-soil in privies; other garbage, back yards.

WARREN COUNTY.

FRANKLIN—POPULATION 3,500.

REPLIES BY O. EVANS, M. D.

Water Supply.

1. Open and driven wells.
2. One partially constructed, to be finished in early spring.
3. (*a*) Six pipes six inches in diameter' sunk to the depth of 60 feet, strike a very pure soft water. These are connected at the surface, and by a large steam pump water will be furnished to every part of the town. The wells are finished, and pipes will be laid in the spring.
5. Our wells will furnish 1,000,000 gallons is 24 hours.

WARREN COUNTY—Continued.

6. Almost exclusively.
7. Principally dug and walled with stone.
8. 22 to 28 feet.
10. Sand and gravel.
11. Very largely, from the nature of the soil and the manner of constructing privy vaults.
12. Many of them dry; almost all very low.
13. No, except in one location, where there were a number of cases of enteric typhoid, which I was inclined to charge to bad water, in the absence of other apparent cause.
14. Very little.
15. No.
16. Dug, of varying size, walled with brick and cemented; sometimes cemented without brick.
17. See answer to 13 and 18.
18. Seven or eight cases of enteric typhoid in one locality, where a pipe had been driven into the bottom of an open well that had become almost dry.

Disposal of Sewage.

1. About 1,000 feet; these were constructed to carry waste from the paper mills to the river.
2. None.
3. Only at its ends.
4. 24 inches.
5. There are none.
6. Into the Great Miami River.
7. Yes.
8. Very generally; indeed, the almost universal resort.
9. 4½ to 6 feet square, and from 5 to 10 feet in depth.
10. Very rarely, or not at all; ordinarily planked or laid up with stone.
11. Regulated somewhat, but not efficiently.
12. Very little, if any.
13. Night-soils thrown into privies; house slops into sink or on the ground; kitchen garbage fed to hogs or hauled away.

Refuse and chemical solution from pulp mill are drained into a creek below town, rendering the water poisonous to fish and totally unfit for cattle to drink. Is there no remedy for this?

LEBANON—Population 3,000.

REPLIES BY S. S. SCOVILLE, M.D.

Water Supply.

1. Wells and cistern.
2. None.
6. Well water is used by nineteen-twentieths of the inhabitants.
7. Ordinary wells.
8. Average depth twenty feet.
10. Water is obtained usually in lower part of the drift overlying the blue limestone.
11. Exposed about the same as other towns in the Miami Valley; one-half the wells are well guarded from surface water, three-fourths from privy-drainage.
12. Half of them quite low.
13. No.
14. One family in twenty use cistern water.
15. About one-half of the cisterns are provided with filters through which the water runs into the cisterns.
16. They are nearly all walled with brick, and cemented.
17. Very rarely the past season.
18. We have had five or six, possibly seven or eight cases of typhoid fever during the summer and fall, and possibly attributable to impure water.

Disposal of Sewage.

1. All open sewers in town except two or three of short length; one leading from laundry.
6. One into an open gutter, the other into a branch.
8. Almost universally.
9. Four by five feet, and seven feet deep.
10. Not generally, mostly planked.
11. Yes.
12. Very few are in use.
13. Hauled out of town, dumped in by-places, or on fields as fertilizers.

Our water supply is rendered unhealthy only by surface and privy drainage; the latter is doubtless the worst. We are trying to adopt a plan of tight or cemented vaults for privies.

OREGONIA—Population 110.

REPLIES BY J. B. KERSEY, M.D.

Water Supply.

1. Wells and cisterns.
2. None contemplated.
6. Entirely.
7. Dug.
8. Ten to twenty-five feet.
10. Clay and gravel.
11. Privies are situated some distance from all wells.
12. Some were dry, others very low.
13. Nothing that could be traced to the water.
14. Not at all.
17. None.

Disposal of Sewage.

1. No sewer system in our village.

SPRINGBORO—Population 553.

REPLIES BY RALPH S. MICHEL, M.D.

Water Supply.

1. Wells.
2. None contemplated.
6. Almost exclusively.
7. Dug and walled.
8. From ten to forty feet.
10. Alluvium with sub-soil of stiff clay.
11. Not liable to contamination.
12. Quite low; many dry.
13. No; but the rain came just in time.
14. To a very limited extent.
15. Filtered before storing.
16. Of brick and cemented with filter above ground.
17. Not this year.

Disposal of Sewage.

1. No sewerage system.
8. Universally.
9. Shallow.
10. No.
11. Yes; they are not allowed to become a nuisance.
12. Not at all.
13. Hauled away and thrown upon the fields as a fertilizer.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

WARREN COUNTY—Continued.

WAYNESVILLE—Population 1,200.

REPLIES BY E. F. DAKIN, M. D.

Water Supply.

1. Wells.
2. No.
6. Almost everybody uses it.
7. Common, walled in with limestone.
8. Twenty to twenty-five feet.
9. No boring here for an artesian well.
10. Sandy, and limestone rock.
11. They are usually from fifty to one hundred feet from dwellings or wells.
12. Most of them had little or no water in them.
13. No; we have had no epidemics, rather an unusually healthy summer.
14. Very little.
15. Before.
16. Usually walled with brick and plastered with cement.
17. No.

Disposal of Sewage.

1. None of any amount scarcely in town.
2. Two or three.
3. Open at each end.
4. Eight inches.
5. Four inches.
6. Usually in gutters.
7. No.
8. One to each building.
9. One to four feet.
10. No, usually planked.
11. No.
12. Very few in use.
13. Various; night-soil put in ground and covered with earth; garbage goes into slop barrel.

Our town is situated on high elevated ground; water runs off quite rapidly into river.

WASHINGTON COUNTY.

BELPRE—Population 900.

REPLIES BY C. C. J. GUTHRIE, M. D.

Water Supply.

1. Cisterns, wells and Ohio river.
2. No.
3. Ohio river.
6. Thirty per cent.
7. Open and walled, and driven wells.
8. Forty-six feet.
9. Never been tested.
10. Loam, sand and gravel, and some clay.
11. The second stratum is clay, and on that there is a hard pan, impervious.
12. But little change from other times.
13. No; The health of the community was good during the summer.
14. Sixty-five per cent.
15. No.
16. Cemented, and a few walled with brick and cemented.
17. No.

Disposal of Sewage.

1. No sewers.
8. One-half the privy vaults are ten feet deep and walled; none to the others.
9. Four by six feet, ten feet deep.
10. No.
11. No.
12. About one-half.
13. Thrown on the gardens.

BEVERLY—Population 900.

REPLIES BY A. S. CLARK, M. D.

Water Supply.

1. Wells.
2. No.
6. In general use.
7. Generally stone walls.
8. Sixteen to sixty feet.
10. Loam, with gravel bottom for deep wells; shallow rock on hill.
11. Most of them are remote; only contaminated by high water on low lands.
12. Good, as most of them are fed from the river.
13. None.
14. Not at all.
17. Not in village.

Disposal of Sewage.

8. To every lot.
9. Eight to ten feet.
10. No; generally boarded up.
11. No.
12. None.
13. Fed to pigs, and thrown into streets, or alleys, etc.

HARMAR—Population 1,600.

REPLIES BY G. S. BROWNING, M. D.

Water Supply.

1. Two rivers—Ohio and Muskingum.
2. No; they have been talking it up lately.
3. (*a*) Ohio and Muskingum Rivers. (*b*) Ohio one-half mile wide; Muskingum one-fourth mile wide. (*c*) Generally clear.
6. By every one for drinking.
7. Dug and drove wells.
8. Forty feet.
9. Forty feet; about the same as river water, only very clear.
10. Sandy and clay, with six feet of hard pan, the water being just under the hard pan.
11. Not at all; the closets are shallow and kept well cleaned out.
12. They were very low, almost dry; some of the dug wells were dry.
13. There was an unusual amount of typhoid and malarial fevers, caused by the water, I think.
14. Not much.
15. Yes; both before and after.
16. Walled and cemented, and some cemented on the clay.
17. Yes; several this fall and summer.
18. I had twelve cases of typhoid fever; other physicians fourteen; this is all that I know of.

Disposal of Sewage.

1. None.
8. All the privies have vaults from four to fifteen feet deep; principally four and five feet.
9. Four by six feet square; from four to fifteen feet deep.
10. No.
11. I think not.
12. None that I have ever seen
13. It is generally hauled out of the corporation; kitchen slops are fed to the hogs and thrown out.

WASHINGTON COUNTY—Continued.

HESLOP—Population 450.

REPLIES BY C. K. ANDREWS, M. D.

1. Wells and springs.
10. Lime and clay.
11. They are in no way liable to be contaminated from privy vaults or cess-pools.
12. They were nearly all dry; our water supply was mostly from springs, which is hard water.
13. None; this is a healthy country, free from epidemics. We live here after the old backwoods form of living.
14. Not used.
17. I have not.

LOWER SALEM—Population 300.

REPLIES BY M. V. HARDY, M. D.

Lower Salem is situated on Duck Creek, in Washington county; has no system of water works or sewerage; no towns above or below us. I cannot fill out the blank to answer any good purpose.

NEW MATAMORAS—Population 600.

REPLIES BY C. T. RILEY, M. D.

Water Supply.

1. Wells, and the Ohio River.
6. Used nearly altogether for drinking and cooking.
7. Tile wells.
8. About sixty feet.
10. Clay, sand and gravel.
11. None nearer than seventy-five feet.
12. All dry; dug them deeper.
13. No.
14. A few families only.
15. Filtered.
16. Cemented.
17. No.

Disposal of Sewage.

1. Surface drainage.
8. There are a few privy vaults.
9. Ten to twenty feet.
10. No.
11. No.

WAYNE COUNTY.

BURBANK—Population 293.

REPLIES BY A. D. BLANCHARD, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. Dug and drilled.
8. Sixteen to eighty feet.
9. Cannot tell, as there are none here.
10. Clay soil, about five to ten feet, balance rock.
11. The same as in any carelessly conducted community; some pay attention to such conditions, others do not.
12. Very low; some entirely dry.
13. No epidemics of any kind; was as healthy as at any time.
14. Very little, if any.
17. Have not.

Disposal of Sewage.

8. Almost entirely.
9. From nothing to four feet.
10. No, not one in the place to my knowledge.
11. I think not.
12. None to my knowledge.
13. Usually used on the gardens as fertilizer.

DALTON—Population 800.

REPLIES BY D. Y. ROEBUCK, M. D.

Water Supply.

1. Wells and a fountain.
2. No.
4. (*b*) Reservoir, constructed of brick, and holds about two thousand barrels. (*c*) No.
5. Do not know, as it is fed by the fountain.
6. Exclusively.
7. Dug wells; a few drilled.
8. Average twenty-five feet.
9. Thirty and forty feet; do not know the rest.
10. Gravel.
12. Good.
13. No.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. Thirty-three per cent.
9. Six by eight.
10. No.
11. No.
12. Sixty-seven per cent.
13. Placed on the lots and fed to pigs.

MT. EATON—Population 300.

Water Supply.

1. Wells.
2. None.
6. All well water except a few springs.
7. Dug.
8. From twenty to forty feet.
9. None here.
11. Fifty to one hundred feet.
12. Very low.
13. None.
14. None.
17. No.

Disposal of Sewage.

1. None.
8. On nearly every lot in town.
9. Not known.
10. I think not.
11. No.
13. Thrown on lot.

ORRVILLE—Population 1,900.

REPLIES BY S. P. GRILL, M.D.

Water Supply.

1. Wells.
2. No.
6. All use it.
8. Twenty to thirty feet.
9. Have none.
10. Clay.
12. Quite a number went dry.
13. No.
14. Very few use it.
15. Yes.
16. Cemented.
17. Yes.
18. Diarrhœa and fever.

Note.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

WAYNE COUNTY—Continued.

Disposal of Sewage.

1. None.
8. All use them.
9. Most of them only a few feet deep.
10. No.
11. No.
12. None.
13. None hauled away.

SHREVE—Population 1,000.

REPLIES BY ELI D. POCOCK, M.D.

Water Supply.

1. Wells.
2. Contemplated.
6. In nearly every ease.
7. A few drilled, dug and walled with stone.
8. From twelve to sixty feet, and drilled one hundred and twenty-five feet.
10. The shallow in clay and alluvial; the deep in rock and shale.
11. The shallow are very liable to contamination.
12. The shallow were very low; the others did not suffer to any great extent.
13. We had a large number of cases of typhoid fever.
14. Very little.
15. Don't know.
16. In the ground, walled and cemented.

Disposal of Sewage.

1. About forty rods.
2. Only to cellars.
4. Ten inch.
6. In a small creek.
7. No.
8. Generally.
9. Four or five feet.
10. No.
11. No.
12. None.
13. Don't know; think thrown upon the surface.

WILLIAMS COUNTY.

BLAKESLEE—Population 100.

REPLIES BY G. E. STARNER, M. D.

Water Supply.

1. From tubular and driven wells, 25 and 65 feet respectively.
6. For drinking and cooking.
10. A rich porous clay, with quicksand bottom at 20 to 30 feet.
11. 20 per cent.
12. Bored and dug wells were filthy, and some finally failed.
13. Typhoid and typho-malarial fevers.
14. None used.

Disposal of Sewage.

1. We have no sewers.
8. One to every house.
9. Three feet.
10. No.
11. No.
12. None.
13. Some throw them from the back door, and others anywhere convenient.

EDGERTON—Population 1,000.

REPLIES BY J. C. MORTLAND, M. D.

Water Supply.

1. Wells.
2. Not any.
6. Universally.
7. Mostly drove wells.
8. 30 to 50 feet.
9. None here.
10. Generally sandy.
11. Not exposed.
12. Water failed in a few, but in most there was plenty.
13 Some cases of typhoid fever, notably where the water was low.
14. To a very small extent.
15. Yes, before storing.
16. With brick and cement.
17. Some cases.
18. They were mostly a low grade of fever, with gastric disturbance.

Disposal of Sewage.

1. None.
8. One to each dwelling.
9. Mostly small.
10. No.
11. No.
12. Not many.

WOOD COUNTY.

MILLBURY—Population 500.

REPLIES BY L. C. LAW, M. D.

Water Supply.

1. From shallow wells.
2. No water-works, nor in contemplation.
6. Exclusively.
7. Dug wells and drilled wells.
8. 8 to 20 feet and 50 to 100 feet.
9. All wells have to be pumped; never have been analyzed.
10. Clay loam on top, with outcroppings of limestone.
11. In 50 per cent. of surface wells, liable to contamination, and surface water in all cases enters surface wells.
12. Very low; much water had to be hauled one to three miles.
13. Inflammation and congestion of liver and kidneys and stomach.
14. Only from necessity.
15. No one has any arrangement for filtering.
16. Barrels are used generally; sometimes set in the ground; wooden tanks.
17. Yes, liver, kidney and bowel troubles.
18. Were quite general during the months of July and August; did not find many cases where drilled wells were used.

Disposal of Sewage.

1. None.
8. In general use.
9. 2 feet by 4 and 4 feet deep.
10. No.
11. No.
12. None.
13. Emptied into vaults or thrown on the ground.

Proximity of barn-yards, vegetable gardens in fall and early winter and spring from decomposing vegetables; hollow logs for wells.

WOOD COUNTY.—Continued.

PERRYSBURG—POPULATION 2,000.

REPLIES BY JOHN H. RHEINFRANK, M. D.

Water Supply.

1. From wells.
2. Neither.
6. Almost entirely.
7. Dug wells; some bored wells.
8. Twelve to sixty feet.
9. There are none.
10. Yellow and blue clay.
11. The average distance of wells from privy vaults, etc., is from twenty-five to seventy-five feet; on account of soil are not very liable to contamination.
12. Very low; some dry.
13. No.
14. Very little.
15. Generally filtered before and after storing.
16. Cement and wooden cisterns.
17. No; except typhoid.
18. Comparatively few cases.

Disposal of Sewage.

1. About a mile.
2. About ten.
3. By catch basins.
4. Two feet.
5. From six to twelve inches.
6. Into the river.
8. To a great extent.
9. Two by four feet; depth four feet.
10. They are not; most of them are planked.
11. It is not, except a rule of the board for cleaning and emptying.
12. Very few.
13. Privy and back-yards.

PORTAGE—POPULATION 500.

REPLIES BY W. E. HUGHES, M. D.

Water Supply.

1. Wells.
2. No.
6. Exclusively.
7. Drilled in the limestone rock.
8. Average sixteen feet.
11. None.
12. Low.
13. No.
14. None.
17. No.

Disposal of Sewage.

12. None.
13. Generally thrown on or plowed in for manurial purposes.

RISING SUN—POPULATION 500.

REPLIES BY H. L. BYINGTON, M. D.

Water Supply.

1. Wells.
2. No.
6. Entirely.
7. Mainly drilled; a few dug.
8. Sixteen to thirty feet; average about twenty-three feet.
12. Water was very low, and many I consider to have been heavily charged with impurities rising from accumulations in the bottom, and seepage thrown from privies, barns, and waste water thrown from the house. The water was not examined.
13. Yes; typhoid fever.
14. None.
17. Yes.
18. About twenty cases of typhoid fever.

Disposal of Sewage.

1. None.
8. Entirely.
9. About two by four feet, and one to three feet deep; average eighteen inches.
10. No.
11. Cleaning regulated by ordinance.
12. None.
13 Night soil is usually hauled away. Occasionally the privy has been moved and refuse buried; slops, garbage, etc., are simply thrown out around the house.

TONTOGANY—POPULATION 500.

REPLIES BY A. EDDMON, M. D.

Water Supply.

1. Wells.
2. No.
6. Mostly well water used.
7. Surface water wells.
8. Twelve to twenty-five feet.
9. Fifty to one hundred feet; lime and sulphur; good flow.
10. Clay.
11. Not much danger; hard-packed clay not porous.
12. The majority entirely dry, the rest very low.
13. To some extent; a few cases of typhoid fever, but an unusual amount of diarrhœa.
14. Not very much.
15. Not generally filtered.
16. Mostly pine tub cisterns, holding fifteen to thirty barrels.
17. I have.
18. Mostly diseases of the intestines; some cases with low fevers.

Disposal of Sewage.

1. One mile, to drain the town or streets from strgnant water.
2. A good many tile drains from houses or yards to carry off water.
8. Two-fifths.
9. Four to six feet.
10. No.
11. Yes.
12. None.
13. Manure pile, back alleys, etc.

WYANDOT COUNTY.

MCCUTCHINVILLE—POPULATION 500.

REPLIES BY T. S. WILSON, M. D.

Water Supply.

6. Exclusively.
7. The common form.
8. Average, twenty feet.
10. Clay.
11. Very little, if any.
12. Very low; quite a number failed.
13. There was not.
14. Very little.
15. Is not.
16. Wood.
17. No.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on pages 119 and 120 of this Report.

WYANDOT COUNTY—Continued.

Disposal of Sewage.

1. None.
8. Exclusivelly.
9. Quite variable.
10. No.
11. No.
12. None.
13. The back yard.

SYCAMORE—Population 500.

REPLIES BY I. B. GIBBS, M.D.

Water Supply.

1. Wells.
2. None in use, and none contemplated.
6. Almost entirely.
7. Dug and bored.
8. From fourteen to one hundred and thirty feet.
10. Principally clay.
11. Most of them are from forty to sixty feet from the vaults or cess-pools.
12. Dug wells nearly all failed, while the bored wells stood about the one guage.
13. None.
14. Rarely.
15. Before.
16. Of brick and cemented.
17. I have, but not many this fall.
18. Low forms of fever.

Disposal of Sewage.

8. Universal.
9. Two and one-half by four feet by five or six feet deep.
10. No.
11. No.
12. Not at all.
13. Night-soil is generally emptied in privy-vaults; kitchen-garbage, etc., usually emptied upon the ground.

UPPER SANDUSKY—Population 4,500.

REPLIES BY ISAAC N. BOWMAN, M.D.

Water Supply.

1. Wells.
2. No; one is contemplated.
6. Almost exclusively.
7. Ordinary and tubular.
8. The ordinary, fifteen feet; the tubular, seventy feet.
10. Gravelly.
11. To a small extent usually.
12. But few of the shallow wells failed, and none of the tubular ones.
13. No.
14. By but very few families.
15. Yes; before storing.
16. Brick and cemented.
17. No.

Disposal of Sewage.

1. Three miles.
2. But few.
4. Three feet.
5. Eighteen inches.
6. Into the Sandusky river.
7. No.
8. Almost exclusively
9. Four by six.
10. No.
11. No.
12. Few, if any.
13. Used as fertilizers.

SUMMARY OF REPORTS OF WATER SUPPLY AND SEWERAGE OF TOWNS IN OHIO.

SOURCE OF WATER SUPPLY.

The entire number of reports received was four hundred and twenty-two. Of this number two hundred and eighty-eight towns are using well water exclusively for drinking and culinary purposes; eighty-three are using wells and cisterns, twenty-six wells and springs, and thirty-one wells and water-works.

Of the eighty-three towns using wells and cisterns, wells are used chiefly by fifty-eight, and, to a limited extent, by twenty towns.

Of the twenty-six towns using well and spring water, twenty-one use well water chiefly and five to a limited extent.

Forty of the towns reporting have water works, but thirty of these depend chiefly upon wells for their water supply. In three places water is used about equally from wells and water works, while in seven, wells are only used to a limited extent.

The following is a list of towns reporting water works:

Ashtabula, Bellaire, Hamilton, Springfield, East Liverpool, Wellsville, Bucyrus, Crestline, Galion, Cleveland, Lancaster, Columbus, Cincinnati, Kenton, Steubenville, Painesville, Granville, Newark, Bellefontaine, Oberlin, Toledo, Youngstown, Marion, Medina, Piqua, Troy, Dayton, Ravenna, Chillicothe, Fremont, Portsmouth, Tiffin, Alliance, Sidney, Canton, Waynesburgh, Akron, Cuyahoga Falls, Warren, New Philadelphia. Of these places Bellaire, E. Liverpool, Wellsville, Cleveland, Cincinnati, Steubenville, Newark, Youngstown, Fremont use water works chiefly as a source of supply.

Of the towns reporting there is not one in which well water is not used to some extent for drinking purposes. In Cincinnati, our largest city, it is used to a "limited" extent, which may mean, by many thousands of people. In Cleveland, next in size, one-fortieth of the population, or over 5,000 people, are drinking well water. In Columbus it is estimated that seven-tenths, or over 50,000 people use well water, while in Toledo, a city of 80,000, it is stated that probably one-half to two-thirds of the population use well water.

Now, in Cincinnati, privy vaults are found to some extent in all parts of the city, and are in extensive use in parts not sewered. These vaults are not cemented.

In Cleveland four-fifths of the people use privy vaults, and only those constructed since 1880 are cemented.

In Columbus seventy per cent. use privy vaults, and it is only within the last two years that they have been required to be cemented; and so in Toledo, they are used "very largely," and are not cemented.

It thus appears that a large number of people in these, the four largest cities of our State, are using water which must often be most foully polluted.

Dr. Ashmun, Health Officer of Cleveland, says, in regard to sickness from the use of impure water: "This last September (1887) a family of five sick with typhoid fever; had water examined; found it polluted by organic matters; had vault cleaned, *when the water in the well fell two feet, with a corresponding inflow into vault.*

Undoubtedly many wells in our large cities would, on examination, prove to be in a like condition. But not in cities alone are polluted wells to be found. The reports show that, in a large number of the small villages, the utmost carelessness prevails in regard to the contamination of drinking water. In many cases the wells are so situated as to receive surface drainage from houses, stables, pig-pens, etc.; but many who recognize and provide against this source of pollution are apparently careless, perhaps ignorant, of the dangers arising from *underground* currents of water, which bear with them the foul matters gathered from adjacent privies, cess-pools, and other partially hidden sources of impurities.

One hundred and one, or about one-fourth of the reports, (made by physicians), testify to having met with sickness caused by impure drinking water. The form of sickness reported in the majority of cases, was typhoid fever.

During the latter part of summer and early part of autumn a drouth of great severity prevailed, because of which some communities were entirely without water, except as they hauled it from a distance. According to our reports, the wells in 308 places were "low," many of them "dry;" in 24 places "only surface wells failed;" and in 68 places "wells were unaffected by the drouth."

In answer to the question, "Was there, during this time, an unusual prevalence of any form of disease seemingly due to this condition?" Three hundred and sixteen answered "no;" 60, "yes, typhoid fever;" and 46, "yes, diphtheria."

DISPOSAL OF SEWAGE.

Of the 422 towns reporting, 75 have sewers. Of these, 40 are for storm water only, and 35 have house connections.

The old-fashioned privy vault is used to some extent in all but a few of the towns reporting, being in "general use" in 300. In no place are they all properly constructed and cemented, though in the larger cities such requirements are now usually made. In these places the emptying and cleaning of them is usually under control of boards of health.

In the small country villages privies are frequently built without vaults, excreta being deposited in shallow holes, or simply on the surface of the ground.

In twenty places the dry earth closet is reported as in general use, but in some of these, evidently, they consist simply of a shallow hole in the ground, dry earth being used to cover the excreta.

In the majority of places privy vaults are never emptied, a new one being dug when the old one is full.

Where night soil is removed, it is generally disposed of by carting away and burying.

House slops, kitchen garbage, etc., is generally thrown into yards and alleys, except in the larger cities; and in these there seems to be no systematic method pursued.

The answers evince that polluted water is used to a dangerous extent in many places; and that the sources of such pollution are to be found in the majority of our cities and villages.

LETTERS AND REPORTS FROM CORRESPONDENTS.

The following communications have been selected for publication from a mass of correspondence received at this office:

TYPHOID FEVER.

West Jefferson, Ohio.

C O. Probst: The blanks in the enclosed sheets do not allow sufficient space to properly answer some of the questions. While we have had no epidemic of the fever here this summer and autumn, yet I have had cases on hand continuously since July 15th, in fact have seen more cases than in any other year since 1856. The first case in July was a gentleman from western Kansas, and I of course know nothing of its origin. Very singularly, his father made a visit to Kansas in August, and returned with the fever. The son died from embolism of the pulmonary vessels, on about the 25th day of the disease. The father recovered. No other cases in the family or neighborhood that could have had connection with these. All my other cases have been scattered, i. e., have occurred in widely-separated neighborhoods. In one family in Prairie township, the first case occured August 1st, and the fever has been with them ever since, the fourth case having taken his bed last Saturday. No other cases in the neighborhood traceable to this family. In another neighborhood were cases that seemed to have originated in one family, i. e., a woman was very ill for some weeks, and a sister, visiting her as a nurse, became ill; next, her husband, and following him, a young lady who had given the family help as a nurse.

The cases have been of all grades of severity—some so mild as to make it difficult to make the patients understand that they had typhoid fever. Diarrhœa has not been prominent; in fact, in many cases, entirely absent. In two cases of almost fatal hemorrhage, there was no preceding diarrhœa. In one of these cases diarrhœa followed the hemorrhage—in the other none.

In looking for causes, I have been struck with a similarity in the surroundings of many families. Very few, or none, could be traced to water impregnated with leakage from privies. In some cases there were no privies, and deposits were made at such a distance from wells, that no suspicion of poisoning from this source could be entertained. But there was this in common: immediately about or near the wells were cess-pools, hog-wallows, or duck-ponds, filthy beyond description In all such cases I had the wells inclosed and the puddles filled and covered with dry earth, with benefit, I think, in some cases. An examination of the well-water often showed nothing but the purest as to odor or appearance, while in other cases the water was positively nauseating. In the family where the four cases occurred, the water seemed all right; but, insisting that the well be cleaned, there was found about six feet of mud, so foul, when it was stirred, as to almost drive the workmen from the well. These conditions, of course, have been present other years when there was no fever, and I can only account for it now (if we regard the water-supply as the cause), by the fact that all wells in this region are, and have been since June, unprecedently low. A well that would ordinarily have from 6 to 20 feet of water, now has but a few inches, or one or two feet, thus having all the constituents in a concentrated form. While I have regarded this condition of the water-supply as the probable cause, yet I am somewhat puzzled to reconcile this view with the fact that while the water-supply remains the same, yet the fever seems to be disappearing, having met with but one new case in the last two weeks.

In families where only one case has occurred, I might possibly attribute the immunity of others from the precaution of boiling the water before drinking; but I am sure that my orders in this respect were so imperfectly carried out, that I cannot claim much for that as a means of prevention. To sum up, I do not believe that in any case the fever has originated in infection from privies; in every case the surroundings of the well have been filthy; in every case the well-water has been unusually low, more so, and for a longer period than at any other time in twenty years; in many cases the water has been offensive to the smell; in every case where the well has been cleaned, the bottom has been found filled from one to six feet with a mass of filth, which was fearful to contemplate, as having been the filter for the drinking-water.

Apologizing for the length of this letter, I remain very truly yours,

J. N. Beach.

P. S.—I have had a few of your circulars, and have distributed them. More might be placed with advantage. Send me a few copies.
J. N. B.

Alton, O., *November* 13, 1886.

Dear Doctor: The three cases of typhoid fever I report this week are patients of my friend, Dr. Pinkerton, of Galloway. I have seen them a few times for him while he was not well enough to see them himself. I would not report them at all, but for the fact that they are all at Galloway, and all in one family. Two other cases in the same family died two or three weeks ago—about the time these took sick. The family were living in a small house, the floor of which was touching the ground, and their water-supply was from a well about three or four rods removed from two privy vaults, and a stable a few rods further away. Another and better house was procured, and the water-supply obtained elsewhere, since which there have been no new cases. No other cases in the village or neighborhood.

Very truly yours,
L. Woodruff, M. D.

CEREBRO-SPINAL MENINGITIS.

Byesville, O., *November* 7, 1887.

C. O. Probst, M. D.: Your letter received. I will comply with your request, as far as I am able. Within my knowledge, there has been, within the past eighteen or twenty months, some twelve or fourteen cases of cerebro-spinal meningitis, of which all but two terminated fatally. The two exceptions are still living, but not fully recovered. They do not have proper use of their lower extremeties, and there seems to be partial paralysis. The disease has not spread by contagion, nor does it seem to be contagious, for but one case has occurred in a family of several children, who have been confined in the same room with the patient, the other cases occurring with patients who have had no possible chance for exposure to the disease; cannot see that any local condition that I can detect favors the spread of the disease, it occurring in all or various localities of the town, and also the country, on hill-tops and in the valleys. Our town is located in a valley, through which runs a very sluggish stream of water; do not know whether that possibly has an influence upon it or not. The disease has occurred at three different times—January, 1886; January, 1887, and September, 1887, in which about the same number of cases have occurred, with about the same result each time. The disease has been principally confined to children, the majority under the age of five years, and two or three under the age of one year.

Such is a brief, and, of course, incomplete history of our cases. Treatment seems to be of little avail, except to palliate and keep the patient from such severe suffering. Would say that none but very robust children have been attacked with the disease as yet.

Yours truly, J. W. Ringer, M. D.

P. S.—Children six or seven months old die within an hour or two from the attack.
R.

DIPHTHERIA.

Ravenna, O, *July* 12, 1887.

T. C. Miller, M. D., *Massillon, O:*

Dear Doctor: Some time in February, 1887, the first case of diphtheria appeared in the Red Brush district, four miles north-west of Ravenna, and three miles north-east of Kent, a school district, lying partly in Ravenna township, and partly in Franklin township. The soil of the district is of a gravelly loam, and the district is bordered on the north by the bottom land along the Cuyahoga river. The school-house is a new structure, having been built two or three years ago, and is situated on a high point of land near the center of the district.

A son of Alonzo Bentley, of Shalersville, was boarding in the house of one Myers, and attending the school, when he was taken with diphtheria, and attended school about two days before he became seriously sick, when he was removed to his home, where he died two or three days later. Four or five cases developed in the Myers family, of more or less severity, but all recovered. It next appeared in the Beery family, about 1½ miles south of Myers'. There were no children attending the school from this family, and the only child in the family was a babe, which was one of the last to be attacked. and recovered fully. The Beery family consisted of the old man and his wife (both over 70 years of age); one daughter, a woman about 30 years of age; three sons, the youngest aged 19 years, the oldest having a wife, and of a grandchild about 8 months old. In this family all except the aged couple had the disease in a malignant form, and three, to-wit: the young woman and the youngest son, died. While they were suffering from the disease in the Beery family, in March, it appeared in the family of John Berger, about one-fourth of a mile west of the school-house, on the Kent road, and three-fourths of a mile north of Beery's. His oldest daughter, aged 13, had a very severe attack, but recovered. His youngest daughter had a mild attack, but his house-keeper had it quite severely. They all recovered. The school, at my suggestion, was closed, and no more of the disease was seen until in May, when the school opened again, after the school-house had been thoroughly fumigated for 48 hours. Soon after the school opened for the spring term the disease appeared in the family of one Silvercool, about half a mile west of the school-house. It was a mild case, in a school-boy 6 or 7 years old. There was but one living room in the house, and I ordered the windows and doors kept open, as it was warm weather. There was one other child in the family, aged 9 years, but she did not contract the disease At the same time the disease appeared in the Marshall family, just west 25 or . 30 rods of Silvercools. Here there were five children under 11 years of age; three had the disease, but none died. About this time the teacher of the school was taken with the disease, and went home, to Kent. In June the disease appeared in the family of N. Knapp, just west of Berger's, and at this time two have died and one or two more are very sick. The mortality thus far has been about 33 per cent. The most of the families where the disease appeared are in comfortable circumstances. The water for the school-house was procured at a well near a vacant house on the land of John Berger.

The above is, as nearly as I know it, the history of the endemic of diphtheria in Red Brush school district. There have been no cases outside of the district, in the neighboring districts, and, with the exception of the Beery family, all were patrons of the school. B B. Loughead, M. D.

POISONED CATTLE.

Franklin, O., *May* 26, 1887.

C. O. Probst, *Secretary Ohio State Board of Health:*

Dear Sir: Your letter to the editor of the *Chronicle* in regard to the death of cattle that occurred here, was handed to me for an answer.

I have seen several of the owners of the dead cows, and, while they all agree that their loss is due to poison, they are not sure as to how the cows got it, nor as to the kind of poison. The symptoms were as follows: The cows were as well as ever on Saturday night and the next day. On Sunday they were driven to the river, where they drank some of the water. On Monday morning five of them died very suddenly, their eyes protruding, stiffening of the limbs, and swelling of the body immediately after death. The stomach of one was examined, and it showed that the food had been thoroughly digested.

As to the water in the river, I can say that it is a fact that the paper mills here are using for bleaching and coloring purposes poisonous materials, which are, after being used, let flow into the river. I have seen the fish in great quantities come floating down the river on their backs; these were poisoned by "bleach" being run in the river. The coloring is not used as often as the "bleach," but is more poisonous to the fish.

Now it is reasonable to suppose that if this polluted water will kill fish, it must also be injurious to the cattle that may drink of it. The water, after it is so polluted, has a very queer appearance. One may notice this coloring for a long distance, separate in the water, in streaks, sometimes not thicker than a man's finger. Should a cow happen to drink of it before it mixes in the river, it cannot be otherwise than hurtful.

I have shown your letter to our health officer, Mr. A. T. B. Terry, who has promised to further investigate the matter, and you may communicate with him on the subject.

In conclusion, I would suggest that some means be sought by which this poison could be otherwise disposed of than in the manner now in use, and a rigid enforcement had after the method is found.

I am, respectfully, yours, etc., A. F. Spohr.

LEAD POISONING.

Springfield, O., *November* 12, 1887.

Dr. Probst: I make a hurried report of the cases of lead poisoning.

Flake white is a pure white lead, bought in bulk and sold at 5 cents an ounce. Every druggist here sells it and knows what it is. It is a dry powder, and I presume is used only by a low class of people, who use it to paint their faces, just as a painter would paint a house.

Hoping you may find some points of interest, I am yours truly,

W. W. Hall.

REPORT OF TWO CASES OF LEAD POISONING FROM USE OF COSMETIC.

On September 29, 1887, I was called to see Mrs. V., aged 32, widow, tailoress; gave a history of ill health during past three years, and for two years unable to sew, because of failing strength in right wrist; during the three years has steadily grown paler, thinner in flesh, weaker in wrist joints, and with occasional attacks like the present one, recurring about every two months; 'present attack began three days before, with loss of appetite and severe pains about all the larger joints, and increase in severity of other symptoms. Here I will remark that the careless habits and mental traits of the entire family is such that it was with the greatest difficulty that any clear or concise answer could be gotten to even a single question. The wrist-drop was accidentally discovered during the examination, which condition the patient even then seemed to think little of. Besides this patient, a widowed sister was afflicted, but not so severely. On concluding that I had lead poisoning to deal with, the most thorough search through all the common sources was instituted. She spoke of using a face powder, but said it was flake white, and was only a chalk preparation. I investigated as to the possibility of its source being in the drinking-water, which is well water, white lead washes, none of which she was using for leuccorrhœa, or any local disease, hair dye, glazed earthenware for sauce dishes, use of tobacco or snuff, lead whistles or toys, but could find no clue. Inquiry at a drug store revealed the nature of the cosmetic. The druggist said, "Why, it's pure white lead!" It had been most carelessly and slovenly used—made into a paste by mixing with water and marbleizing the face with it, leaving the saucer or dish containing the mixture in every room, and on every shelf, and, probably not even washing the hands after applying it As may be seen, the channels of entrance to the system were through the stomach, skin and lungs.

In Mrs. V.'s case the blue gingival line was faint; in Mrs. S., her sister, very marked, while the reverse was true of the colic. The arthralgia was most severe for five days in Mrs. V., she not being able to sleep for 48 hours at a time. It did not appear in the case of Mrs. S. Paralysis is complete in the extensor muscles of the right wrist, and almost complete in the left. In the right there is no response to either the faradic or galvanic currents in extensor, and but feeble response in flexor muscles. Except in the extreme wasting of muscles, other parts of the body are not affected. In Mrs. S. the upper extremities were normal, but her legs were so affected that she walked with very unsteady gait. In Mrs. V. the head symptoms were very prominent—headache, vertigo, interrupted sleep, with hideous dreams, and at times loss of consciousness and clonic convulsions, lasting for half an hour. The worst symptoms lasted through two days and nights.

The treatment consisted in thoroughly cleansing the house of all lead vessels and powders, large doses of sulphate of magnesia and iodide of potassium, with morphia during painful part of illness. They are both gaining rapidly in weight; the blue line is fading, though still present. The paralysis is no better, and the prognosis is bad.

During three years the poisoning has been going on. The severity of the cases from such a source can be understood when it is remembered that the victims saw a great deal of gentlemen's (?) company. The fact that none of the other four members of the family, consisting of father, mother, and two brothers, were affected, argues that the cosmetic was the real source of the poisoning.

I report these cases that the use of lead powders may not be so extensive, if these facts become generally known. On inquiry, I find every drug store in the city keeps "flake white" for sale, and they say it is only pure white lead.

W. W. Hall, M. D.

SMALL POX.

In addition to the cases noted in the report following, one case appeared at Columbus, Ohio.

The patient, a colored man, was promptly removed to the pest house. Rooms and clothing were disinfected, and others who had been exposed were vaccinated. The patient made a good recovery. No other cases occurred.

Cleveland, Ohio.

C. O. Probst, M.D., *Secretary State Board of Health:*

Dear Sir: A case of small pox was reported to me yesterday, and died to-day. The boy, 13 years old, attended school last Friday, Nov. 5th, played about out of doors, Saturday. Showed spots of eruption on arms, shoulders and chest Sunday morning, with a temperature of 105° F., Sunday evening, when the diagnosis was made. After searching all sources of infection thus far suggested, I have reached no conclusion as to origin. The boy was vaccinated when nine months old, and not since. Teachers in all schools have been notified to watch for signs of any farther showing of the disease.

Respectfully yours,

G. C. Ashmun, H. O.

Cleveland, Ohio,

C. O. Probst, M.D., *Secretary State Board of Health:*

Dear Doctor: Yours of yesterday received, and in reply would say that the others in the family where the case of varioloid occurred, have been re-vaccinated, and also others exposed. The boy affected had been vaccinated when nine months old, but not since. Query.—Is it less likely to be permanent in its protection when vaccinated so early? The boy was so dull from the poison, high temperature, rapid circulation or all combined, when I first saw him, that no answers to questions could be obtained, and a possible clue to the source of infection may have been lost on that account.

Yours sincerely,

G. C. Ashmun, H. O.

CLEVELAND, OHIO,

C. O. PROBST, M.D., *Secretary State Board of Health:*

DEAR DOCTOR: There is no truth in report as to any other cases of small-pox in this vicinity, so far as we know.

Yours, etc.,

G. C. ASHMUN, H. O.

DAYTON, OHIO, *Feb.* 12, 1887.

C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: The case of varioloid reported by Dr. J. C. Reeve, occurred in a boarding house in our city; he reported it to me on the morning of the 3d inst. The victim, a mechanic, had but recently come to the house, from where I did not learn. He was at once sent to city pest house outside of corporation. The boarding house disinfected, and people vaccinated. No other cases have occurred.

Respectfully,

J. M. WEAVER, *Health Officer.*

CINCINNATI, O., *March* 3, 1887.

C. O. PROBST, M.D., *Secretary State Board of Health:*

DEAR SIR: Yours of the 2d inst. was just received. The first case of small-pox occurring in this city since September, 1886, was in a man named Henry Klare, who had just come from New York, where he had spent eight days after his arrival from Germany. He reached Cincinnati on February 8, and went directly to his son who, with his wife, lived in a tenement house in which there were six families. He became sick that night, and on the 10th inst. the eruption of the disease appeared, but not until the 14th was a physician called to see him. The physician then called, Dr. Plantholt, said it was a case of small pox, but did not so reported it at this office. I am told that he advised secresy in regard to the case, lest the health authorities should send the man to the pest house. On the evening of the 15th, I heard there was a case of small pox at 104 Carr street, and on going there found such to be the case. The next morning I sent him to the Branch hospital, about five miles in the country, where he still is. Everything washable in the room was soaked in water, to which was added sulphate of zinc and salt. The bedding, furniture, and rooms were disinfected by burning a large quantity of sulphur in the rooms, and keeping them closely shut up until the next day.

The patient was nursed by his daughter-in-law, and as soon as he was sent to the hospital, she washed herself, changed all her clothes and went to another room, until the next day.

I sent a physician to the house to vaccinate all in it, but the Klare family refused to be vaccinated, saying that they preferred to have it done by their own physician, but they did not have it done by him. About the 18th, Mrs. K. was delivered of a child at full term. She was attended by a mid-wife and on the 23d broke out with varioloid. She had been vaccinated when a child. No physician was called until the 25th, when Dr. Kramer saw the case, and at once vaccinated the babe; but the woman was too sick to be removed to the hospital. The house was placarded. and every possible measure taken to keep out all but the husband and nurse, and to restrict the movements of those necessarily in communication with the case.

I do not know what more could have been done to prevent the spread of the disease, so long as it is not in the power of the health authorities to enforce vaccination. That the disease spread to the second case was not, in my opinion, due to any defect in the disinfection of the rooms or bedding, for the period of time between the disinfection and the outbreak of the disease in Mrs. Klare was too short for her to have taken it from such source. She must have contracted it directly from her father-in-law.

I am much obliged to you for your offer to send circulars. If the disease does not stop where it now is, I will send to you for some of them.

Very respectfully,

B. Stanton, H. O.

P. S —Two cases of small-pox were reported to this office last year. One in March and one in September. The March case I knew nothing about, as I was not then in office. The September case was reported about one hour after I entered upon the duties of health officer. It was a case imported from Chicago. *Complete isolation*, vaccination and subsequent destruction of everything that could not be thoroughly disinfected, prevented the spread of the disease. In this case the physician was an educated man, who acted promptly. In the Klare case an ignorant quack was in attendance, and but for the accidental discovery of the case, the disease would soon have had a good start, and might have led to an epidemic that would have swept off hundreds.

Yours,

B. Stanton.

Farmersville, O., *May* 31, 1887.

C. O. Probst, M.D., *Secretary State Board of Health, Columbus, O.:*

Dear Sir: I answer to your inquiry in reference to the small-pox at this place: we have two case among the Italians. These are now placed in a pest house near town. There are seven of these Italians who were employed on C., J. & M. R. R. at this place, and also about one hundred other hands. These Italians were with these men after one of them was broken out with small-pox. No telling where it may end. Our people are much frightened about this matter. The balance of these Italians are threatening to go to work Monday next. Would suggest that you notify J. F. Cooney, Greenville, Ohio to remove them. Mr. Co ney is road-master of C., J. & M. R. R.

The first case noticed by our doctors was May 23, in the evening.

Hoping you will help us out of our trouble, let me hear from you at once,

And oblige,

L. A. Weaver, P. M.

On receipt of the above letter I left on the next train, and arrived at Farmersville in the afternoon of June 3d.

An investigation developed the following facts:

Two brothers, Marke and Filgio Buccio, and an old man, all Italians, sailed from Naples in a large emigrant vessel April 17 or 18, 1887. They arrived in New York May 5 or 6, where they remained six or seven days, stopping with a family of Italians from their native place, Agnone. They left New York May 12 by rail, arriving at Farmersville May 14, where they met four Italians, one of whom was a son of the old man traveling with the brothers. On Monday, May 16, these men went to work with a gang of a hundred men on the C., J. & M. railroad, which is being built through

Farmersville. These seven Italians rented the down stairs of a small brick house, doing their own cooking. The old man, owner of the house, lived alone upstairs. On Friday, the 20th, the road boss noticed one of the Italian brothers was sick, his face and neck being broken out with an eruption. Saturday he remained at home sick, and also Sunday and Monday, but most of the time was not confined to bed.

He was first seen by a physician, Dr. J. B. Shank, on Monday evening, May 23. At this time he was pretty generally covered with a pustular eruption. Dr. Shank diagnosed the case as small-pox, and immediately notified the mayor, who fortunately (?) lived just across the street from the Italian quarters.

The brother of the sick man remained with him Tuesday and Wednesday, the other five Italians, however, continuing to work with the gang of men.

On Wednesday a small shanty 12x15 was hastily erected about a quarter of a mile from the village, and on the evening of this day the entire party of seven, with their clothing, bedding, cooking utensils, etc., was removed to this pest-house. Dr. Cumminings, township physician, was called to take charge of the cases, and saw them that afternoon. He discovered that the brother of the sick man also had the disease, though in a very mild form, the eruptions being in the vesicular stage and very scanty. The five well men were then vaccinated, though they all showed good scars from former vaccination.

The rooms in the house in town which had been occupied by these men were closed and thoroughly fumigated. The owner of the house moved out, but was not vaccinated, though he had been previously. A few families in the immediate neighborhood, about fifteen persons in all, were vaccinated. A guard was placed near the pest house who carried the men food and drink. I met the mayor, township clerk and attending physicians Friday, June 3. In company with Dr. Cummings I visited the pest-house and with difficulty, owing to their imperfect English, gathered the above history of their cases.

Both cases were up and looking fairly well. They were both fine specimens of physical development. The scabs had fallen off the first case. The second case had fully developed scabs. The first case showed the lancet marks of the vaccination on ship board, which had evidently not taken The second case shows two marks. The one done on shipboard on the arm, which had not taken, or being imperfectly, and an old scar on the fore-arm. The well men were very impatient at being kept in quarantine and evidently intended to break it, which could very easily have been done. The attending physician had promised to let them all out the following Monday. In consultation with the mayor, physician and township clerk, I advised the following programme, which they agreed to carry out: To procure five suits of clothing for the well men, who on Saturday or Sunday might be allowed to put them on after bathing in the creek near the pest-house and come into town, leaving their other clothing behind them, the two sick men to remain in quarantine five r six days longer. At the end of this time all clothing and bedding used by the patients to be burned; other clothing and bedding which could be washed to be boiled in a bichloride of mercury solution; everything else to be tightly closed in the room, which was to be fumigated twenty-four hours.

The Sanitary News of June 4 reports a case of small-pox at Chicago among the Italians, the man arriving in New York May 6 from Naples. They report several cases of small-pox on board ship. The cases at Farmersville no doubt arrived in this ship, though they did not know of any cases of small-pox aboard.

FARMERSVILLE, O., *June* 12, 1887.

C. O. PROBST, M.D., *Columbus, O.:*

DEAR DOCTOR: Yours of the 7th came duly to hand, and thanks also for cards for weekly reports. The advice you gave us in regard to disinfecting the clothing of the Italians, and burning those of the patients, was carried out by one of the Italians and guard with one exception. They used chloride of lime instead of bichloride of mercury. The purchase of the material was left to the clerk by the trustees, therefore, the mistake. I saw the patients early the morning of the 9th, and ordered the work to be done, and turned the patients loose the next morning. All is well here so far. If you have had no report from Ansonia, Darke county, Ohio, I would suggest that you communicate with the authorities there, as I have a pretty authentic report by the train-men of our road, that Henry Parks, who was working with the Italians, and left here June 2d, was taken down with small-pox shortly after reaching Ansonia.

Yours with regards,

J. V. CUMMINGS.

ANSONIA, OHIO, *June* 14, 1887.

C. O. PROBST, M.D., *Columbus, O.:*

DEAR SIR: We have one case of small-pox at our place; he is a county charge; we removed him to a grove outside of corporation, in a tent; procured a nurse that had had the disease. The family was vaccinated the same day (five members). They are kept inside the yard fence and provisions carried to them. He is in the vesicular stage. There is no doubt of its genuineness. What is the best manner of disposing of tent, etc., after patient is well?

Will keep you posted as to future results. I remain yours,

L. C. ANDERSON, M. D.

P. S.—Case was contracted from Italians near Germantown, Ohio, working on the C., J. & M R. R.

LETTER FROM VIENNA ON THE SIXTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

BY THOS. HUBBARD, M. D., TOLEDO, OHIO.

On the 26th of September Vienna, welcomed within her hospitable walls an assembly of representative scientists from nearly every portion of the Eastern hemisphere, and a fair representation from the West. Most cordial and well appointed was this reception, in all its details, and most worthy of such hospitality was the illustrious body of leading thinkers, assembled for conference and interchange of opinion, the benefit of which all civilized people may share. Such names as Virchow, Pettenkofer, Spencer Wells, Köhler, Bronardel, Murphy, Esmarch, Frankland and Galton, known to the scientific world by their labors in many branches of science, insure to the proceedings of any organization with which they may be associated a profound degree of merited respect. The representation of all central Europe was remarkably good, and especially from Austria, France and Germany. Russia and the Scandinavian countries were fairly represented, and England sent a few of her most distinguished hygienists. Turkey, Egypt and Japan made unusual effort, and even the States of Uruguay, Venezuela and Mexico had representation. From our own country the names of Dr. Felix Formento, New Orleans; Dr Henry Baker, Secretary Michigan State Board of Health; Wm. Ed Germer, President Pennsylvania State Board of Health, and Joseph Row Smith, Lieutenant Colonel and Surgeon U. S. A., are mentioned, but were not all present in person. Doubtless the attractions of the International Medical Congress detained many from attending, but surely state and national authorities should provide, that, in the future it should not be left to general statisticians and essayists from other countries to make the only recorded mention of sanitary and kindred affairs in our own land. The opening sitting was held in one of Vienna's favorite music halls and presided over by Professor Ludwig. Crown-Prince Rudolph, of Austria-Hungary, as Protectorate of the Congress, was received in fitting address by President Ludwig at promply 11 A. M. He responded in well-chosen words, welcoming the delegates and expressing his sincere interest in all that pertained to bettering the condition of the people (the best capital of the State), and in the progress of science in general.

Addresses were then read by Professor Bronard, of Paris, and Professor Max Pettenkofer, of Munich. A free translation of portions of the latter is given as showing the present status of sanitary work in Germany, and the direction of their efforts:

"HYGIENIC INSTRUCTION IN UNIVERSITIES AND SCHOOLS OF POLYTECHNICS.

"It is fitting that I should offer an apology for having chosen as the subject for my address, Instruction in Hygiene, etc., a theme already often and exhaustively treated of in current literature, in books, and also discussed by previous Congresses. You may, perhaps, be thinking that, since I have not a new subject, I may yet have something original to say. But I cannot even promise you this. What I have to present has already been said and repeated by others and myself. Whence comes the encouragement, then, at this time, and before this illustrious assembly, to have selected such a theme? 'Out of the fulness of the heart the mouth speaketh.' Let this be my apology.

"And my heart is full, partly from joy that in our day attention has been so forcibly directed toward this subject, and that in universities and high schools it is receiving merited study; that it is to be discussed by this, the Sixth International Congress, which organization should congratulate itself in the patronage of his Imperial Highness, Crown-Prince Rudolph of Austria-Hungary.

"But still we must concern ourselves that this universal spirit of inquiry employs itself in proper channels. Hygiene was not originally considered as a distinct science, but was treated as an art, the feature of which man had acquired through individual experiences. It is even so in the history of all sciences. For how many ages had man already successfully cultivated and produced the cereals, before plant-physiology or agricultural chemistry were developed? As has the peasant in a purely empirical manner learned to till the soil to good advantage, so has every rational being learned what serves his physical welfare to good purpose, and also what is injurious, and he aims to encourage the one and avoid the evil influences of the other. In what can learned instructors or scientific research aid the individual endowed with the faculties of instinct and intelligence in ordinary degree? And since it is a fact that, until now, hygienic study has been pursued pre-eminently upon this individual-experience, purely empirical basis, and through this channel we have already accumulated a vast store of valuable knowledge, why not continue in this natural manner rather than enter upon the dark and hitherto untrodden paths of the realms of sanitary science? An individual, were he free in all his natural judgments, would be able to perceive through his innate faculties, called instinct in lower animals, what is best for his physical welfare, but where one is not in a natural state, or where necessity or perverted judgment oppose the pointings of instinct, there must that consensus of opinion, the expression of accepted sanitary rules, stand as an artificial substitute, and indeed not without power to act, instead of the perverted natural preservative faculties. This empirical hygiene is certainly progressive, and has been so since the dawn of intellect, but the time is now ripe for the scientific application of the already accumulated empirical knowledge, and it becomes our duty to further this important step. What the Englishman calls "comfort," has a pre-eminently hygienic signification, for man has surely attained a high standard of life in the acquirement of comfort. The wisely practical English people set aside about one-half of their incomes to be devoted to the comforts of life. Another English expression, full of hygienic meaning, is "Cleanliness is next to godliness" ("Reinlichkeit kommt gleich nach Frœmmigkeit"), and certainly the comparative mortality rates of the city of London prove how richly this hygienic piety has been rewarded. In the seventeenth century, when London had a population of about 1,000,000, the average mortality rate was 42 per 1,000, while at the present time, when there more than 4,000,000 inhabitants, the rate is reduced to 21 per 1,000. The burden of sickness can be expressed in dollars and cents and its effect on tax rates is a most potent appeal to all. Statistics show that one in every 35 cases of sickness entering the hospitals, ends fatally, and we can also state that the average duration of sickness is about 20 days. If now we accept the yearly mortality of 30 per 1,000, as indicated by statistics of many of our cities and towns, we have 1,050 cases of sickness, each with an average duration of 20 days. This harmonizes quite accurately with the statistics of the Registrar, that each individual is sick. on the average, 20 days in each year, or about 5 to 6 per cent. of the whole time. I have estimated that the cost of treatment, nursing and loss of labor products averages, for every day of sickness, two marks (50 cents), which is certainly below the actual, and yet it amounts to 42,000 marks ($10,500) per 1,000 inhabitants for each year. The people shrink from such figures, and from their greatness consider them simply as unbelievable, but with a very short-sighted injustice. The results are practically invariable from whatever basis estimated.

If the people of our cities would make a reduction in that class of expenditures known as extravagances, and devote such sums to a bettering of sanitary conditions, they would be most richly rewarded. Take for example my own city, Munich, famous for her beer production. Four glasses of beer, instead of five, as a daily allowance, would insure a yearly reduction in expenditures of 5,000,000 marks ($1,250,000), a truly enormous sum, and capable of great good if properly expended in bettering sanitary conditions

The study of hygiene as an art has hitherto been relegated to the medical profession, and under the fostering care of their much divided labors has made not a little progress. Its acknowledgment as an independent and a most important department of modern science, has been rewarded by remarkable advancements. In fact, if physicians do not interest themselves more in the study and with better-directed efforts than they have in the past, they stand in danger of letting the whole subject grow beyond their grasp.

The following recommendations,formulated by Dr. Hartmann, of Berlin, at the Convention held in Munich in 1885, are now presented for the sanction of this Congress:

(1). Theoretical hygiene, or preventive medicine, should be taught in schools of polytechnics by specially educated physicians, and to such a degree as the character of the education demands.

(2). Sanitary science should be taught in special divisions, according to the demands of the departments of architecture, construction engineering, mechanics and chemistry. There should also be instruction by those familiar with the practical features of the subject in each special department.

(3). The instruction in hygiene should be obligatory, and in its special departments acknowledged as a subject for examination.

(4). It should be the duty of schools of polytechnics to further the organization of institutes of sanitary science in connection with an experimental department, which can also be used by instructors in the different departments for their lectures and experiments, as well as for private investigation.

The venerable chemist closed amid great applause. The more impressive in that it came from colleagues and compeers eminently capable of appreciating the true work of his philanthropic and highly scientific labors.

[In conversation, some time later, he expressed himself much gratified with reports of sanitary work in America, and that " the European people must bestir themselves lest the new land beyond the sea surpass them in this important feature of civilization."]

THE TEMPERANCE QUESTION.

A general review of the methods and success of the struggle against the abuse of alcohol in European states may be of some interest, especially since the presentation of the subject before such a body of scientists insures a candid and accurate statement of the condition of affairs.

There was an unanimous denial of the statement advanced by a New England writer, that the progress of this evil had a definite relation to climatic peculiarities, it being advanced that the growth of the evil was more marked in the northern and colder countries. As an argument against this theory it is cited that Norway has made a most remarkable progress in abating the evil within the last twenty years, and the same may be said of Sweden. Russia has made but little progress against the evil, and still suffers greatly from the demoralizing influences of whisky and brandy drinking.

The efforts of European societies seem to be directed almost entirely against the abuse of only the stronger drinks, while wine and beer seem rather to be encouraged in production and made available to the public, being regarded as potent allies against the more injurious drinks. Indeed, a most urgent appeal is brought forward in an essay before the congress, to encourage the cheaper production of wine and beer, at the same time advising measures to insure a better quality of these articles, hoping thereby to crowd out the sale of the stronger drinks.

The conclusion of Dr. Guillaume, of Neuchatel, Switzerland, closing an admirable paper on every feature of the subject are translated, and are well worthy of consideration, since they outline a most influential plan of action directed against the root of the evil, and insure a permanence in whatever progress may be made.

(1). *Special preventive regulations* are to be preferred in the opposition to drunkenness and intemperance.

(2). Such preventive measures must exercise an authority over children, since it is necessary to elevate the moral tone of the youth of the land in order to insure their susceptible minds from the contamination of evil influences.

(3). Among the remedies that can be made use of, as far as children are concerned, and which must be substantially intrusted to private organizations, the following can be recommended:

(*a*). Establishment of asylums and schools for children which shall be devoted to the care of children of the needy free of charge.

(*b*). Encouragement of associations which have the purpose of arousing a desire for intellectual and moral recreation without neglecting a proper physical training.

(*c*). Establishment of school savings banks.

(*d*). The founding of childrens' and youths' libraries; with special foresight that they contain useful and instructive books.

(*e*). Watching over the orphans who are left in the hands of the guardians of the poor, or in schools.

(*f*). Encouraging those just out of schools toward entering associations which, through instruction courses in singing, gymnastics, etc., further the cultivation of the body and of useful accomplishments.

(*g*). Establishment of schools with optional courses in which instruction in drawing, carving, etc., is given.

(4). The State can aid these private institutions in the following manner:

(*a*). Through definite improvement of the curriculum of public schools so that it is insured that the instruction harmonizes more completely with the demand for the practical. The reform should begin in the seminaries in order that capable teachers may be educated who will be prepared to arouse in the children in their care a desire for the study, and spirit for thorough work in this department. It becomes possible, in this way, to simplify the plan of study, and prevent the overburdening of the pupil.

(*b*). We should introduce physical training or lectures on hygiene, and, at the same time, not increase the number of branches studied.

(*c*). Besides this, the girls should have instruction in special cources on the elements of house-keeping and cooking.

(*d*). For boys, of the age of 13 to 16 years, some kind of practical instruction in the use of tools, and for youths under 20 years, schools of higher manual training should be insisted on.

(5). For young men and adults we recommend the following preventive measures:

(*a*). We should endeavor to exert an influence on public opinion, in order to establish the feeling that not only drunkenness and the use of spirirs, in fact, all consumption of alcohol outside of the moderate dietary use at home and free from all pernicious surroundings, should be condemned.

(*b*). All regulations and laws that have for their object the bettering of the condition of health—more wholesome foods, dwellings, clothing, etc.—of the laboring class, should be aided.

(*c*). Temperance associations are useful as a means of organizing and forwarding the plans as expressed above.

(*d*). Co-operative unions should be established and the price of good wine and beer so reduced that the sale of whiskey will be lessened.

(*e*). Only those merchants should be patronized who do not allow a retail sale of intoxicating beverages in their establishments.

(*f*). Servants and day laborers should not be allowed daily rations of spirits.

(*g*). There should be established in every business place association rooms, accessible to all, and in which the sale of spirits should be forbidden, and where the guests can obtain good beer and wine, as well as the current literature.

(*h*). These rooms should be under a committee whose duty should be to see that lectures and amusement add to the attractions of the place.

(*k*). Since loss of work tends to an increase of drunkenness, it should therefore become a care that, in the large places a workmen's institution should be maintained where the day laborer, who temporarily, for example, through the condition of weather, is prevented from working, can be employed. This work bureau should be combined with eating rooms for the destitute.

(*l*). Establishment of labor bureaus.

(*m*). Savings banks should be established and laborers encouraged to regularly deposit a certain portion of their daily earnings.

(*n*). Life indemnity and accident insurance companies should be encouraged and recommended.

(6). The practical execution of the plans in the foregoing paragraphs demand preventive regulations through the establishment of a management which can unite the individual efforts into one whole. This central committee should deal with the different departments of public benefit and plan the general measures for the advancement of the cause. In this manner every association would outline its own field and the individual experiences be utilized for the whole by publication of the proceedings.

(7). The state monopoly in the manufacture and the Gothenberg system for the retail sale of alcoholic beverages are to be recommended. In lieu of deficiencies in this monopoly, the existing laws and regulations concerning the public inns should be modified to meet the circumstances:

(*a*). The permission to open an inn should be given only to persons of reputable character. Such place of business must show a certain degree of hygienic arrangement, such as a definite relation between window surface and floor space, and a practical system of ventilation.

(*b*). It shall be forbidden that children under sixteen years of age be furnished with spirituous liquors.

(8). Drunkenness shall be classed as a punishable offense, and the penalty be established by law. As a rule, inebriety should not excuse nor make any milder the proscribed punishment for an offense.

Essays were read by P. O. Flood, of Christiana, and H. Goemann Borgesius, of Hague, Holland A. Samners, Bremen, and Dr. Moritz Ganster, of Vienna, on the present status of the alcoholic question in their own countries, thus presenting in a comparative and reliable form the condition in five important European states. The marked decrease in consumption of the stronger alcoholic beverages (whiskey and brandy), in Sweden and Norway, is a favorable comment on the working of the Gothenberg system. In the year 1829 the yearly consumption was 54 quarts per capita (more than a quart a week). At the present time it is not more than 8 quarts per capita. At present the consumption of wine is about a quart per capita yearly, and about sixteen quarts of beer in the above countries.

The exhaustive essay of M. D. E. Clement, of Lyons, France, on The Utilization of the Sun's Rays for Purposes of Warming and Lighting Dwellings, possesses an eminently practical value, and its teachings should receive merited attention. Its principles are especially applicable in new countries where town and city building is so progressive and land can be had to meet the essential requirements for breadth of streets and space between buildings. There can be no doubt about the hygienic value of direct sun's rays, since the most conclusive proof is evinced in cases of animals deprived of its influence. It certainly stands to reason that *that factor which has been all important in elevating man to his present high physical status, is necessary to* (*at least*) *keep him on such a plane*, especially when other new surrounding influences are pernicious.

To quote from his conclusions:

The importance of (direct sun) light is so essential for the health of man that every effort should be extended to bring about its beneficial effects; it favors the activity of the skin and increases the interchange of gases in the lungs; it enriches the blood and encourages the nutrition of the body; it promotes a proper development of the young and contributes toward physical and mental strength. Indeed its deprivation may be said to be a most important factor in the weakening and destruction of many constitutions; and lastly, it is very essential in the commercial and manufacturing world. These enumerated qualities belong only to direct sun's rays, and only in a very limited degree to reflected rays.

In pursuance of this aim, the following principles are enumerated:

(1). The buildings must be so constructed that the direct rays shall penetrate as deeply as possible into the rooms.

(2). The art of distributing the sun's rays in dwelling rooms proscribes the breadth of the street, the height of the houses, the relations of the window openings to the size of the rooms.

(*a*). The size of the window space must bear a definite relation to the breadth, height, and depth of the room.

(*b*). The lintel should be placed as high as possible and free from all obstructions which limit the size of the opening; let it be from without, as an awning, or from within, by curtains.

(3 . The height of the building shall be regulated by the breadth of the street, and it should be insisted that the ground floor should be lighted to the greatest extent that the arrangement of the room itself will admit.

(*a*). The best arrangement is that in which the direct light penetrates to 6 feet above the floor level on the opposite side of the room from the windows; of course this can scarcely be secured, except in isolated houses.

(*b*). Supposing a building height of 60 feet and street breadth of 80 feet; this allows the direct rays to penetrate to about 3 feet above the floor level, if ground floor.

(*c*). Such streets as have only a breadth of 60 feet allow only the feebler and reflected rays to reach the back part of the room, and furnish a satisfactory illumination only for a space of 6 to 8 feet (including wall thickness), so that only about three-fifth of room is lighted sufficiently for work.

These regulations are only assumed as standards, and are only attainable in specially-favored climates, and in new cities where land can be secured reasonably.

The essay of M Emile Trelat on the Utilization of Sun's Rays for Lighting and Heating, supplemented that of Dr Clements' by plans and specifications for building according to the above principles.

He proscribes that the streets shall be at least one and one-half times as broad as the buildings are high, and that the depth of each story shall not be more than one and one-half times the distance from the top of the window casing to the floor.

The space between buildings must necessarily be much greater on meridianal streets than on equatorial, bearing about the relation of four to two.

Both essays treat the subject in a most thorough and conclusive manner, and are worthy of careful study. The general tone of the essays shows that modern scientific labor is tending toward the solution of practical every-day problems.

About thirty subjects were treated of each by many separate essays, and are now published in pamphlet form. The discussions and decisions of judges, etc., are not yet available.

This brief sketch of a few of the interesting essays read may serve to show something of the character of work done in this a most successful Congress The attendance approached 3,000, and all seemed very enthusiastic in their work. Of course confusion of tongues was considerable of a hindrance to harmonious and rapid transaction of business, but this was reduced to a minimum by the Presidents and Secretaries of sections.

The entertainment was royal, both as regards evening assemblies and banquets, and also excursions into the environs and charming summer resorts near Vienna. Very cheap excursions were given to Constantinople, to Prag, and into Italy.

The next Congress is to be held in London in the year 1892, and it is sincerely to be hoped that the states will awaken to a more lively interest in international hygienic affairs, contribute their share toward the store of scientific sanitary knowledge, which is yearly increasing in such a gratifying mannner as to warrant the assertion that the day is not far distant when the struggle of humanity against the enemy of its happiness will be successful in proportion as the teachings of sanitary science are heeded and acted upon

EXPENSES OF THE BOARD.

The following is an itemized statement of all disbursements from the State Treasury during the year ending October 31, 1887, on account of the State Board of Health, as per vouchers numbered thirty-eight to one hundred and sixty-six, inclusive:

Date.	Number of voucher.	To whom paid.	Amount.
1886.			
Nov. 24	38	C. O. Probst, Secretary—	
		Salary	$111 00
Dec. 1	39	A. H. Smythe—	
		Letter-scales	8 00
		Letter press	5 25
		Park's Hygiene	4 25
		Sundries	9 65
1	40	Prof. C. C. Howard—	
		Chemical analysis	10 00
1	41	Columbus Rubber Co.—	
		Seal	4 50
		Rubber stamp and pad	85
1	42	Western Union Telegraph Co	3 05
9	43	A. N. Bell—	
		Journals	32 00
9	44	Sanitary News	12 00
9	45	Annals of Hygiene	12 80
9	46	C. O. Probst, Secretary—	
		Salary	133 33
9	47	E. L. Probst—	
		Clerical work	37 00
16	48	F. W. Schaub—	
		Messenger, two months	10 00
1887.			
Jan. 19	49	C. O. Probst, Secretary—	
		Salary	133 33
		Postage	30 00
		Expressage	85
		Sundries	1 05
20	50	H. J. Sharp—	
		Expenses as member of Board	25 85
20	51	D. H. Beckwith—	
		Expenses as member of Board	32 20
20	52	Jno. D. Jones—	
		Expenses as member of Board	31 50
20	53	S. P. Wise—	
		Expenses as member of Board	29 40
20	54	Thos. C. Hoover—	
		Expenses as member of Board	15 00

Expenses of the Board—Continued.

Date.	Number of voucher.	To whom paid.	Amount.
1887.			
Jan 20	55	W. H. Cretcher—	
		Expenses as member of Board	$27 00
20	56	T. Clarke Miller, M. D.—	
		Expenses as member of Board	40 55
21	57	Myers Bros.—	
		Printing and stationery	428 48
21	58	E. L. Probst—	
		Clerical work	12 00
21	59	A. H. Smythe—	
		Books and journals	85 23
		Stationery	5 87
		Mucilage	60
21	60	C. C. Howard—	
		Chemical analysis	10 00
21	61	F. W. Schaub—	
		Messenger, one month	6 00
21	62	Western Union Telegraph Co	52
24	63	C. O. Probst—	
		Postage	62 00
Feb. 3	64	C. C. Howard—	
		Chemical analysis	10 00
10	65	Blackwood, Green & Co.—	
		Wire, cloth, staples and labor	5 65
10	66	O. B. Thompson—	
		Repairing plastering	6 00
14	67	C. O Probst—	
		Salary	133 33
23	68	L. E. Decker—	
		Washing and painting walls	14 00
23	69	C. E. Hutchins—	
		Washing and painting walls	14 00
28	70	C. E. Hutchins—	
		Lead, turpentine and oil	12 00
March 15	71	W. J. Hudson—	
		Cyclostyle, paper, ink and oil	4 25
15	72	C. J. Campbell—	
		Engraving cut, letter-heads	15 00
15	73	Myers Bros.—	
		Printing and stationery	96 34
15	74	F. W. Schaub—	
		Messenger, two months	10 00
21	75	C O. Probst—	
		Postage	20 00
		Box rent	1 50
		Expressage	85
		Telegram	29
		Chair cushion and oil of pep	98
21	76	E. L. Probst—	
		Clerical work	21 00
24	77	Cornell & Pheneger—	
		Brushes, comb and soap	3 79
25	78	S. H. Helmer—	
		Door-lock and putting on same	3 00
29	79	E. L. Probst—	
		Translating circulars into German	50 00

Expenses of the Board—Continued.

Date.		Number of voucher.	To whom paid.	Amount.
1887.				
April	15	80	C. O. Probst—	
			Salary	$133 33
	21	81	Thos. C. Hoover—	
			Expenses as member of Board	10 00
	21	82	T. Clarke Miller—	
			Expenses as member of Board	19 08
	21	83	W. G. Dunn & Co.—	
			One dozen towels for office	2 25
	21	84	F. W. Schaub—	
			Messenger, one-half month	5 00
	21	85	Ohio State Journal—	
			Printing	12 00
	21	86	C. O. Probst—	
			Expenses to Warren	16 25
			Postage and box rent	26 50
			Office supplies	1 60
	21	87	R. W. Bock—	
			Two signs with lettering	4 50
			Kraus & Meehan—	
			Carpet, curtains and rugs	87 60
	21	88	Door Sash & Lumber Co.—	
			Bookcase and letter stand	156 50
	21	89	A. H. Smythe—	
			Stationery and sundries	22 70
	21	90	Ohio Furniture Co.—	
			Chairs, tables and mirror, wash-stand and hat-rack.	105 00
	21	91	S. P. Wise—	
			Expenses as member of Board	27 50
	21	92	H. J. Sharp—	
			Expenses as member of Board	16 60
	21	93	D. H. Beckwith—	
			Expenses as member of Board	30 00
	21	94	John D. Jones—	
			Expenses as member of Board	30 00
	21	95	T. Clarke Miller—	
			Expenses as member of Board	56 00
	22	96	Myers Bros.—	
			Printing and stationery	28 75
	—	97	J. M. & M. Westwater—	
			Burners, shades, chamber set and sundries	39 20
May	1	98	W. A. Shore—	
			Messenger 1 month	10 00
	10	99	E. L. Probst—	
			Clerical work	10 00
	11	100	Adams Express Company	1 25
	11	101	American Express Company	3 55
	14	102	C. O. Probst—	
			Salary	133 33
			Postage and expressage	12 45
June	1	103	W. J. Morgan & Co.—	
			5,000 envelopes (lithographed)	20 00
	1	104	C. C. Howard—	
			Chemical analysis	10 00
	1	105	W. A. Shore—	
			Messenger 1 month	10 00

Expenses of the Board—Continued.

Date.		Number of voucher.	To whom paid.	Amount.
1887.				
June	1	106	C. J. Campbell—	
			Maps of Bellaire and Waverly	$15 00
	9	107	Myers Bros.—	
			Printing and stationery	36 31
	9	108	E. L. Probst—	
			Clerical work	20 00
	14	109	C. O. Probst—	
			Expenses to Farmersville	9 35
			Salary	133 33
			Postage	10 00
July	2	110	Westbote Co.—	
			Printing circulars (German)	100 00
	2	111	C. O. Probst—	
			Postage, expressage, etc	15 65
	2	112	Adams Express Company	1 80
	2	113	W. A. Shore—	
			Messenger 1 month	10 00
	5	114	T. Clarke Miller—	
			Expenses as member of Board	32 35
	5	115	S. P. Wise—	
			Expenses as member of Board	32 92
	5	116	D. H. Beckwith—	
			Expenses as member of Board	29 50
	5	117	John D. Jones—	
			Expenses as member of Board	33 70
	5	118	T. C. Hoover—	
			Expenses as member of Board	28 90
	5	119	H. J. Sharp—	
			Expenses as member of Board	32 25
	5	120	C. O. Probst—	
			Expenses to Toledo	15 40
	5	121	W. H. Cretcher—	
			Expenses as member of Board	30 80
	11	122	E. L. Probst—	
			Clerical work	12 00
	11	123	Myers Bros.—	
			Printing and stationery	52 90
	11	124	United States Express Co	2 65
	11	125	Adams Express Co	4 20
	11	126	Western Union Telegraph Co	1 95
	11	127	C. O. Probst—	
			Salary	133 33
Aug.	3	128	Hann & Adair—	
			Reprints of papers	9 00
	3	129	J. Wiggins & Co.—	
			Directory of Columbus	3 00
	3	130	A. H. Smythe—	
			Stationery and sundries	18 85
	3	131	C. O. Probst—	
			Postage	12 25
	3	132	A. N. Bell—	
			Printing	6 50
	3	133	Myers Bros.—	
			Printing	98 00
	3	134	Baltimore & Ohio Express	2 75

Expenses of the Board—Continued.

Date.	Number of voucher.	To whom paid.	Amount.
1887.			
Aug. 3	135	W. A. Shore—	
		Messenger	$10 00
13	136	C. O. Probst—	
		Salary	133 33
		Postage	80 00
22	137	E. L. Probst—	
		Clerical work	24 00
25	138	Adams Express Co	2 40
Sept. 1	139	W. A. Shore—	
		Messenger	10 00
13	140	United States Express Co.	1 50
13	141	Myers Bros —	
		Printing	56 00
13	142	C. O. Probst—	
		Salary	133 33
		Postage	19 10
		Sundries	75
13	143	A. N. Bell—	
		Reprints of papers	6 50
22	144	H. J. Sharp—	
		Expenses as member of Board	20 10
22	145	T. C. Hoover—	
		Expenses as member of Board	10 00
22	146	John D. Jones—	
		Expenses as member of Board	22 00
22	147	S. P. Wise—	
		Expenses as member of Board	25 00
22	148	W. H. Cretcher—	
		Expenses as member of Board	27 00
22	149	Baltimore & Ohio Express	1 15
22	150	C. O. Probst—	
		Postage	10 00
		Expenses to Dunkirk	6 75
		" Washington	54 05
		Subscription to Conference	5 00
22	151	D. H. Beckwith—	
		Expenses as member of Board	24 55
22	152	E. L. Probst—	
		Clerical work	16 00
22	153	T. C. Miller—	
		Expenses as member of Board	30 25
22	154	Adams Express Co	1 30
22	155	J. F. Edwards—	
		Journals	12 80
Oct. 1	156	W. A Shore—	
		Messenger	10 00
1	157	E. O. Knox—	
		Printing Manual of Health Laws	164 00
13	158	C. O. Probst—	
		Salary	133 33
		Expenses to Springfield	3 70
		Telegrams	1 92
		Freight on Manual of Health Laws	1 10
		Office supplies	80
13	159	United States Express Co	2 85

EXPENSES OF THE BOARD—Continued.

Date.	Number of voucher.	To whom paid.	Amount.
1887.			
Oct. 13	160	Myers Bros.—	
		Printing Mortality Reports	$12 00
		" envelopes	9 50
28	161	Myers Bros.—	
		Printing and stationery	45 33
28	162	Sanitary News—	
		Subscription 1 year	2 00
28	163	W. J. Morgan & Co.—	
		2,000 letter heads	14 00
28	164	C. C. Howard—	
		Water analysis	10 00
28	165	A. H. Smythe—	
		Books, stationery and merchandise	18 00
28	166	C. O. Probst—	
		Postage	32 40
			4,982 46

CATALOGUE OF BOOKS AND PAMPHLETS.

REPORTS OF STATE BOARDS OF HEALTH.

Alabama—1886.
California—1880, 1881, 1882. 1883, 1884, 1885, 1886.
Connecticut—1883, 1884, 1885, 1886.
Illinois—1880, 1881, 1882, 1883, 1884, 1885.
Indiana—1881, 1882, 1884, 1885, 1886.
Iowa—1881, 1883, 1885.
Kansas—1885, 1886.
Maine—1885, 1886.
Massachusetts—1875, 1880, 1886.
Michigan—1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885.
Minnesota--1883, 1884, 1885, 1886.
North Carolina—1887.
New Hampshire—1884, 1886, 1887.
New Jersey—1879, 1880, 1884.
New York—1880, 1881, 1882, 1883, 1884.
Pennsylvania—1885.
Rhode Island—1880, 1882, 1883, 1884, 1885, 1886.
South Carolina—1887.
Tennessee—1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884.
West Virginia—1881, 1882, 1883, 1884.
Wisconsin—1876, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886.

PROVINCIAL BOARD OF ONTARIO.

Reports for 1884, 1885, 1886.

NATIONAL BOARD OF HEALTH.

Reports for 1879, 1880, 1881, 1882, 1883, 1884, 1885.
Health Bulletin—1880, 1881.

REPORTS OF CITY BOARDS OF HEALTH.

Brooklyn—1877, 1878, 1885, 1886, 1887.
Concord, N. H.—1886.
Cincinnati—1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885.
Cleveland—1885, 1886.
Dayton—1886, 1887.
Kansas City, Mo.—1886.
Lowell, Mass.--1886.
Lynn, Mass.—1886, 1887.

Middletown, O.—1886, 1887.
Newark, New Jersey—1885, 1886.
Newburgh—1886.
Providence, R. I.—1886.
Reading, Pa.—1886.
San Antonia, Tex.—1886.
Toledo—1886.
Toronto, Ont.—1886, 1887.
Wilmington, Del.—1885.

OHIO REPORTS.

Executive Documents, 1886.
Auditor of State's Report, 1886, 1887.
Biennial Report of Attorney-General, 1886.
Circulars and Laws Relating to Adulteration of Food and Drink. Issued by Food and Dairy Commissioner, 1886.
Report of Meteorological Bureau, 1886.
Report of State Inspector of Workshops and Factories, 1885, 1886.
School Report, 1885, 1886.
Mine Inspector's Report, 1885.
Statistics, 1884, 1885, 1886, 1887.
Agricultural Report, 1885.
Preliminary Report upon Petroleum and Inflammable Gas, 1886.
Annual Report of State Board of Charities, 1886.
Report of Third Annual Meeting of Ohio Sanitary Association.
Life Insurance Report., 1886.
Fire Insurance Report, 1886.

MISCELLANEOUS REPORTS AND PAMPHLETS.

Maryland—Transactions of the Medical and Chirurgical Society, 1885.
New Hampshire—Transactions of the Medical Society, 1886.
Maine—The Sanitary Inspector. Published by State Board of Health.
Minnesota—Domestic Hygiene.
    Tracts upon Contagious Diseases.
    Public Health in Minnesota.
Michigan—Proceedings of Sanitary Conventions.
    Public Health, 1885, 1886.
    Abstract of Proceedings of Board.
    Contagious disease pamphlets, etc.
North Carolina—Health Bulletin. Issued by State Board of Health.
A Report on the Insanitary Condition of the Capital. By the State Board of Health of New York.
A Communication from the Board of Health, relative to New Aqueduct, New York.

Nomenclature of Diseases. By the State Board of Health of Rhode Island, 1884.

Monthly Health Bulletin. Issued by the Provincial Board of Health of Ontario.

State Board of Health Bulletin of Tennessee.

Monthly Bulletin of the Iowa State Board of Health.

Sanitary Propositions to Local Boards of Health. By the State Board of Health of Tennessee.

Sanitary Conditions and Necessities of School Houses and School Life. By D. F. Lincoln, M. D.

Disinfection and Individual Prophylaxis against Infectious Diseases. By Geo. M. Stearnburg, M. D., U. S. A.

Preventable Cause of Disease, Injury and Death in American Manufactories and Workshops. By Geo. H. Ireland, M. D.

Beef Inspection as a Part of Public Hygiene. By D. P. Yonkerman, V. S.

Report on the System of Sewage Disposal, at the State Homœpathic Asylum for the Insane, at Middletown, New York. By Wm. Paul Gerhard, C. E.

A Contribution to the Etiology, Pathology, and Therapeutics of Cholera Infantum. By T. Clarke Miller, M. D.

The Relation of the Physician to Sanitation. By T. Clarke Miller, M. D.

Malaria—Its Origin and Causes as a Factor in Producing Disease. By E. R. Eggleston, M. D.

The Prevention of Cholera Infantum and Kindred Diseases. By Victor C. Vaughan, M. D.

Report of Organization and Minutes of First and Second Meetings of the Pennsylvania State Board of Health.

Report of Proceedings of the Illinois State Board of Health.

School Hygiene. By Prof. T. W. Chittenden.

The Growth of Children. By Prof. G. W. Peckham.

Kerosine. By J. T. Reeve, M. D.

Principles and Practice of Hygiene. By Ezra M. Hunt, M. D.

Land Drainage and Obstructions to Water Courses. By J. T. Reeve, M. D.

The Sanitary Needs of Toledo. By W. W. Jones, M. D.

Sanitary State of the City of Montreal. By Dr. Lewis Lalberge.

Proceedings of the Pennsylvania Pharmaceutical Association, 1886.

Healthy Homes and Food for the Working Classes. By Victor C. Vaughan.

Index Catalogue of the Library of the Surgeon-General's Office, U. S. A., Vols. i, ii, iii, iv, v, vi, vii, viii.

Tenth Census of the United States, 1880, Vols. xi, xii.

Messages and Documents of War Department, 1885–'86, Vols. i, ii, iii, iv.

Smithsonian Report, 1885.

Report of the Commissioner of Education, 1884–5.

Department of Agriculture—Third Report of the United States Entomological Commission.

Sanitary School Houses. By Vermont State Board of Health.

Vital Statistics in Tennessee. A paper by J. D. Plunket, M. D.

Report of the Sanitary Inspection of the St. Lawrence. By the Provincial Board of Health of Ontario.

Duties of Selectmen in Regard to the Preservation of Public Health. By the Vermont State Board of Health.

Dangers in Gasoline. By John H. Kellogg, M. D.

Water Supply of Drift Clay Sands of Ohio. By Prof. M. C. Read.

Resuscitation of the Drowned. By L. P. Bush, M. D.

Cases of Poisoning from Eating of Dried Beef. By R. Harvey Reed, M. D.

A Paper upon the Hot Springs of Arkansas as a Sanitary Resort. By D. H. Beckwith, M. D.

Sewers and Sewer Gases. By D. H. Beckwith, M. D.

Notes on the Relative Rain Fall and Water Supply to Cholera. By Henry B. Baker, M. D.

A Paper upon Atmospheric Purification in Relation to Infectious Diseases. By D. Prince, M. D.

Proceedings of the National Conference of State Boards of Health at Toronto, Ontario, 1886.

Proceedings of the National Conference of State Boards of Health at Washington, D. C., 1887.

Annual Report of the Massachusetts State Board of Lunacy and Charity, 1880, 1886.

U. S. Marine Hospital Service Report, 1884.

U. S. Marine Hospital Service Report on Trichinae and Trichnosis, 1881.

JOURNALS, BOOKS AND PAMPHLETS (by purchase).

Preventive Medicine. Richardson.

Hygiene. Parks.

Hygiene and Public Health, vols. i, ii. Buck.

Examinations of Water, Air and Food. Fox.

Annimal DIseases. Billings.

Health in Building. Drysdale & Hayward.

Ventilation. Billings.

Steam Heating Problems.

Sanitary Drainage of Houses and Towns. Waring.

Plumbing, House Drainage. Buchan.

Sanitary News, 1886, 1887.

Annals of Hygiene, 1886, 1887.

Popular Science Monthly, 1886, 1887.

Sanitary Engineer, 1886, 1887.

Sanitarian, 1886, 1887.

Medical Dictionary. Thomas.

Unabridged Dictionary. Webster.

Wiggins' Directory of City of Columbus, 1887.

Williams' Directory of Ohio, 1887–8.

NAMES AND ADDRESSES OF PHYSICIANS WHO ARE REGULAR CORRESPONDENTS OF THE BOARD.

ADAMS COUNTY.

W. A. McClain	Winchester.
W. K. Coleman	West Union.
E. M. Gaston	Tranquility.
J. W. Guthrie	Manchester.
W. B. Graham	Vineyard Hill.
J. M. Lockhart	Eckmansville.
Berry & Wittenmyer	Peebles.

ALLEN COUNTY.

E. G. Burton	Westminster.
J. R. Clark	Bluffton.

ASHLAND COUNTY.

S. N. Alban	Perrysville.
C. D. Sackett	Mifflin.

ASHTABULA COUNTY.

S. D. Allen	Harbor.
H. W. Dorman	Harbor.
H. N. Kinnear	Harbor.
W. O. Ellsworth	Austinburg.
W. A. Ward	Conneaut.
J. Lee Richmond	Conneaut.
Marcus Kingsley	Kingsville.
C. T. Grover	Orwell.
A. W. Hopkins	Ashtabula.
W. H. Sykes	Plymouth.

ATHENS COUNTY.

E. F. Danford	Glouster.
H. D. Danford	Trimble.
E. L. Carlton	Coolville.
Chas. W. Cable	Nelsonville.
C. Barker	Marshfield.
B. C. Vorhes	Lee.

AUGLAIZE COUNTY.

B. M. Pahl	Findlay.
A. D. Brutaker	New Hampshire.
Chas. N. Potts	New Bremen.
C. A. Sheels	Saint Mary's.
C. L. Dine	Minster.
W. S. Turner	Waynesfield.
R. B. Anderson	Wapakoneta.

BELMONT COUNTY.

B. O. Williams	Martin's Ferry.
D. Q. Steere	Bellaire.
J. Park West	Bellaire.

W. A. Fisher	Bridgeport.
J. V. Webster	Flushing.
J. A. Clark	Glencoe.
W. O. McCalvin	Barnesville.

BROWN COUNTY.

J. N. Salisbury	Russelville.
S. B. Sheldon	Five Mile.
L. C. Laycock	Decatur.
J. L. Baird	Fincastle.
J. J. Quinn	Fayetteville.

BUTLER COUNTY.

C. C. Hoover	Ross.
J. M. Hunt	Blue Ball.
J. M. Parks	Hamilton.
John T. Sutphen	Middletown.

CARROLL COUNTY.

John M. Watt	Mechanicstown.
J. R. Williams	Carrollton.
J. B. Frances	Harlem Springs.

CHAMPAIGN COUNTY.

W. J. Green	Woodstock.
John H. Clark	Mechanicsburg.
H. S. Preston	Mutual.
S. M. Mosgrove	Urbana.
W. N. Unkefer	Mingo.

CLARK COUNTY.

A. W. Mitchell	Dialton.
Henry Seys	Springfield.

CLERMONT COUNTY.

R. C. Belt	Milford.
W. A. Carmichael	Loveland.
S. B. Judkins	Marathon.
A. M. Martin & Son	Bloomville.
N. S Hill	Neville.
J. H. Kinkead	Felicity.
Isaac Redrow	Williamsburg.
W. B. Doan	Amelia.
Julius D. Abbott	Bethel.

CLINTON COUNTY.

C. E. Vance	Martinsville.
Lyman Watkins	Blanchester.
A. F. Deniston	Westboro.
S. B. Lightner	Sabina.

COLUMBIANA COUNTY.

A. M. Ailes	Damascus.
D. M. Bloom	New Waterford.
S. R. Breed	Wellsville.
A. S. McCaskey	East Palestine.
A. G. Vale	Clarkson.
F. M. Clark	Salem.
D. S. Gardener	North Georgetown.

Rush & Church	Salem.
B. C. Battin	Kensington.
Wm. Gibbs	East Liverpool.
W. M. Calhoon	East Liverpool.
R. T. Marks	Leetonia.

COSHOCTON COUNTY.

A. E. Walker	Plainfield.
E. C. Carr	Coshocton.
S. C. Lightner	Keene.

CRAWFORD COUNTY.

G. R. Edwards	Crestline.
J. B. Kreider	Bucyrus.
Thomas F. Kellar	New Washington.
Webb J. Kelly	Galion.
James Robinson	Galion.

CUYAHOGA COUNTY.

G. C. Ashmun	Cleveland.
C. L. Kinnaman	Cleveland.
I. N. Noland	Independence.
W. A. Knowlton	Brecksville.
B. S. Baster	Chagrin Falls.
A. L. Waltz	Collinwood.
R. S. Hubbard	Bedford.

DARKE COUNTY.

O. B. Longanecker	Castine.
E. W. Longanecker	Hillgrove.
H. A. Snorff	Ansonia.
S. M. Hager	Greenville.
C. F. Ryan	Gettysburg.

DEFIANCE COUNTY.

B. E. Miller	Farmer.
A. H. Sager	Farmer.
Aldrich Bros	Defiance.
L. G. Thacker	Defiance.
J. J. Reynolds	Defiance.
S. Hallet	Defiance.

DELAWARE COUNTY.

H. A. Furniss	Galena.
T. J. Williams	Sunbury.
James M. Cherry	Delaware.
H. N. Coomer	Ashley.

ERIE COUNTY.

J. P. Esch	Huron.
Louis Szendery	Sandusky.
G. C. Ehrhart	Sandusky.
E. J. Goodsell	Huron.

FAIRFIELD COUNTY.

G. S. Courtright	Lithopolis.
J. T. Hufford	Clearport.
W. S. Rutter	Clearport.
G. A. Harman	Lancaster.
O. P. Driver	Basil.
T. W. Le Crone	Millersport.

FAYETTE COUNTY.

D. H. Hare	Washington C. H.
J. S. Mason	Milledgeville.

FRANKLIN COUNTY.

F. Gunsaulus	Columbus.
Frank Warner	Columbus.
O. Johnson	Worthington.
L. Woodruff	Alton.
W. H. Blake	Shadeville.
A. L. McLeod	Central College.

FULTON COUNTY.

S. P. Bishop	Delta.
A. B. Lathrop	Swanton.
L. A. Bassett	Swanton.
H. H. Brown	Swanton.

GALLIA COUNTY.

E. Westlake	Gallipolis.
R. D. Jacobs	Rio Grande.
S. W. Williams	Mercerville.

GEAUGA COUNTY.

H. W. Quirk	Burton.
George H. Thomas	Auburn.

GREENE COUNTY.

A. A. Matthews	Grape Grove.
D. E. Spahr	New Jasper.
W. M. Haffner	Yellow Springs.
A. S. Dryden	Xenia.

GUERNSEY COUNTY.

R. H. Henry	Washington.
A. R. Cain	Senecaville.
W. B. Rosamond	Milnersville.
J. W. Ringer	Byesville.
B. F. Coen	Antrim.

HAMITTON COUNTY.

Byron Stanton	Cincinnati.
J. T. Booth	Cincinnati.
W. C. Hughes	Cleves.
C. P. Hart	Wyoming.

R. D. Mussey	Glendale.
T. S. Potter	Carthage.
W. G. Hier	Madisonville.
G. L. Kreiger	Madisonvlile.
J. O. Marsh	Madisonville.
C. L. Metz	Madisonville.
E. A. Flinn	Madisonville.
R. P. Joyce	Sater.

HARDIN COUNTY.

C. S. Ames	Ada.
J. A. Stansell	Forest.
H. N. Mundy	Forest.

HARRISON COUNTY.

J. M. Welsh	Deerville.
R. J. Pumphrey	Freeport.
D. J. Snyder	Scio.
S. B. McGavran	Cadiz.

HENRY COUNTY.

J. A. Bowdle	Pleasant Bend.
C. M. Thompson	Hamler.
J. M. Stout	Holgate.
T. C. Hunter	Napoleon.

HIGHLAND COUNTY.

W. R. L. Dwyer	New Petersburgh.
Rufus A. Dwyer	New Petersburgh.
M. F. Funk	Mowrystown.
F. M. Granger	Russell.
B. S. Leonard	West Liberty.
D. N. McBride	Rainsboro.
F. M. Thomas	Samantha.

HOCKING COUNTY.

C. F. Aplin	Carbon Hill.
M. J. Campbell	Logan.

HOLMES COUNTY.

M. W. Webb	Nashville.

HURON COUNTY.

J. F. Grabill	East Townsend.
J. F. Miller	Bellevue.
John Earls	Bellevue.
L. D. Strutton	Norwalk.
J. A. Jones	Norwalk.
Franklin Burt	Norwalk.
John F. Allen	New London.

JACKSON COUNTY.

Hon. Benjamin Kitchen	Jackson.
B. F. Holcomb	Jackson.
J. L. Zahn	Jackson.
G. W. Darling	Wellston.

JEFFERSON COUNTY.

A. A. Elliott	Steubenville.
J. A. McGlenn	Mt. Pleasant.

KNOX COUNTY.

E. R. Eggleston	Mt. Vernon.
W. W. Pennell	Fredericktown.
W. O. Phillips	Centerburg.
J. D. Smith	Gann.
Frank Humbert	Mt. Liberty.
J. M. C. Cook	Levering.

LAKE COUNTY.

C. M. Hawley	Painesville.
R. L. Ashley	Perry.

LAWRENCE COUNTY.

F. H. Williams	Burlington.

LICKING COUNTY.

G. W. Garrison	Utica.
Hon. Edwin Sinnett	Granville.
A. J. Follet	Granville.
A. E. Smith	Utica.
D. W. Williams	Alexandria.
B. B. Ashbrook	Pataskala.
John Algeo	Hartford.
J. F. Mattingby	Newark.

LOGAN COUNTY.

Wm. McHouseman	Bloom Centre.
W. W. Hamer	DeGraff.
L. Prater	Lake View.
C. M. Wanzer	Zanesfield.
John Wallace	Rushsylvania.
N. V. Speece	Quincy.
F. M. Galer	DeGraff.
Ben. S. Leonard	West Liberty.
W. W. Roach	Bellefontaine.
S. J. Pollock	Belle Centre.

LORAIN COUNTY.

J. C. Jump	Oberlin.
T. R. Mayhew	Oberlin.
E. O. Shelden	Wellington.
N. H. Cornwell	North Amherst.
R. G. Orman	Lorain.

LUCAS COUNTY.

I. Bennett	Whitehouse.
E. Bradley	Whitehouse.
F. M. Heath	Whitehouse.
G. A. Collamore	Toledo.

MADISON COUNTY.

J. N. Beach	West Jefferson.
Ambrose Ogan	Sedalia.
F. N. Mattoon	Plain City.
C. M. Dean	Range.
F. McClintick	Mt. Sterling.

MAHONING COUNTY.

S. K. Crooks, Mayor	Canfield.
W. C. Stafford	New Springfield.
W. L. Buechner	Youngstown.

MARION COUNTY.

Auguste Rhu	Marion.
Charles Buenneke	Marion.
N. O. Brenizer	Prospect.

MEDINA COUNTY.

Frank Young	Weymouth.
N. S. Everhard	Wadsworth.
H. H. Bricker	Wadsworth.

MERCER COUNTY.

G. R. Hagerman	Mendon.
J. M. Lisle	Celina.

MIAMI COUNTY.

J. P. Brandon	Laura.
S. P. Deahofe	Pottsdam.
Ross S. John	Conover.
W. S. Smith	West Milton.
Gainor Jennings	West Milton.
W. H. Kessler	West Milton.
S. S. Gray	Piqua.
J. H. DeBra	Fidelity.

MONROE COUNTY.

T. J. Roe	Sardis.
J. Rupp	Switzer.
H. L. Rosenberry	Miltonsburg.
J. L. Mason	Stafford.
J. W. Weber	Lewisville.
S. D. Griffith	Jerusalem.
W. J. Grimes	Woodfield.
H. H. Price	Malaga.
S. N. Timmons	Clarington.
A. M. Covert	Antioch.

MONTGOMERY COUNTY.

A. Scheibenzuber	Dayton.
J. M Weaver	Dayton.
J. D. Daugherty	Dayton.
A. M. Williamson	Dayton.
J. C. Reeves, Jr.	Dayton.
W. H. Riley	Pyrmont.
C. F. Zinn	Miamisburg.
W. P. Weaver	Miamisburg.

MORGAN COUNTY.

J. B. Humphrey	Malta.
J. E. Brown	McConnelsville.
Hon. Le Roy Holcomb	Pennsville.

MORROW COUNTY.

C. C. Dunham	Fulton.
A. A. Nefe	Whetstone.

MUSKINGUM COUNTY.

J. T. Davis	Zanesville.
J. S. Haldeman	Zanesville.
A. E. Bell	Zanesville.
A. W. Squires	White Cottage.
C. M. Taylor	Adams' Mills.
G. P. Walker	Roseville.
O. B. Crumbake	Duncan's Falls.

NOBLE COUNTY.

W. R. Taylor	Summerfield.
O. O. McKee	Caldwell.

OTTAWA COUNTY.

F. J. Klussman	Elliston.
Paul de la Barre	Port Clinton.
J. J. Bricker	Elmore.
D. Barringer	Rocky Ridge.
A. E. Ferguson	Rocky Ridge.
Edward Morgan	Elmore.
Geo. Vinnig	Oak Harbor.
S. D. Allen	Oak Harbor.

PAULDING COUNTY.

P. Alvin Dix	Paulding.
Levi Stearns	Cecil.
C. W. Gordon	Dague.
B. B. Miller	Antwerp.

PERRY COUNTY.

P. A. Gordon	Junction City.
R. B. Woodward	Somerset.
M. W. Cummings	Moxahala.
F. D. Wygum	Maxville.
H. C. Allen	New Straitsville.

PICKAWAY COUNTY.

J. J. Baker	Tarlton.
John B. May	New Holland.
H. F. Truman	Genoa.
G. C. Hayes	Williamsport.

PIKE COUNTY.

Austin Hutt	Waverly.
J. L. Caldwell	Waverly.
J. W. Little	Cynthiana.

PORTAGE COUNTY.

W. G. Smith	Palmyra.
C. F. Dyson	Hiram.
W. F. Betts	Randolph.
O. A. Lyon	Atwater.
L. L. Johnson	Garrettsville.
L. L. Johnson	Garrettsville.
Guy Warren	Garretsville.
O. H. Newberry	Kent.
T. R. Mason	Ravenna.

PREBLE COUNTY.

F. C. Estabrook	West Manchester.
E. Holaday	West Elkton.
M. E. Williamson	New Paris.
F. C. Gray	Lewisburg.
J. A. Davisson	El Dorado.
O. H. Jefferson	Eaton.
W. A. Campbell	Eaton.

PUTNAM COUNTY.

C. E. Beardsley	Ottawa.
Joseph Morris	Columbus Grove.
E. H. Bird	Dupont.
C. F. Douglas	Kalida.
A. C. Matthias	Gilboa.
John McClung	Leipsic.

RICHLAND COUNTY.

S. P. Dyer	Belleville.
M. S. Love	Shelby.
R. Harvey Reed	Mansfield.

ROSS COUNTY.

J. M. Wiltshire	Gillespieville.
W. E. Pricer	South Salem.
T. S. Barnes	Chillicothe.

SANDUSKY COUNTY.

Alex. Harnden	Clyde.

SCIOTO COUNTY.

J. S. Frizell	Buena Vista.
C. C. Fulton	Portsmouth.
J. P. Bing	Portsmouth.

SENECA COUNTY.

G. L. Hoege	Fostoria.
A. W. Knight	Attica.

SHELBY COUNTY.

E. A. Steeley	Anna.
C. E. Johnson	Sidney.
A. W. Grosvenor	Hardin.
G. M. Tate	Botkins.
J. F. Miller	Port Jefferson.
J. F. Hamsher	Tawawa.
C. E. Whittington	Shawnee.

STARK COUNTY.

W. O. Baker	Louisville.
J. L. Beuclair	Louisville.
Leon B. Santee	Marlboro.
E. J. March	Canton.
Lew Slusser	Canton.
S. A. Conklin	Canton.
James Bates	Alliance.

SUMMIT COUNTY.

W. S. Hough	Cuyahoga Falls.
Seth Freeman	Twinsburg.
G. L. Starr	Hudson.
H. C. Coolman	Hudson.
F. Hodge	Hudson.
L. S. Ebright	Akron.
E. W. Howard	Akron.

TRUMBULL COUNTY.

H. S. Smith	Warren.
A. W. Thompson	Bristolville.
C. M. Rice	Newton Falls.
W. J. Haine	West Farmington.

TUSCARAWAS COUNTY.

A. T. Miller	Shanesville.
T. H. Brannan	Canal Dover.
S. R. Brandon	Uhrichsville.
S. R. Thompson	Uhrichsville.
J. T. McLean	New Philadelphia.

UNION COUNTY.

J. B. Taylor	Broadway.
W. C, Vigor	New California.
W. H. Wills	Milford Center.
R. H. Graham	Marysville.

VAN WERT COUNTY.

W. N. Longsworth	Convoy.
R. L. Crooks	Convoy.
G. H. Williamson	Delphos.
L. E. Ladd	Middlepoint.
W. C. Hastings	Van Wert.
E. L. Wilkinson	Van Wert.
C. B. Reid	Daisie.

VINTON COUNTY.

J. V. Sylvester	McArthur.
G. K. Ewing	Wilkesville.
L. B. Smith	Hamden Junction.
Hon. S. W. Monahan	Hamden Junction.

WARREN COUNTY.

J. M. Van Dyke	Mason.
L. Pampel	Cozaddale.
J. B. Collins	Butlerville.
J. B. Graham	Lebanon.
W. L. Brown	Lebanon.
S. S. Scoville	Lebanon.
Charles Cropper	Lebanon.
W. F. Moss	Maineville.
J. W. Smith	Harveysburg.
W. M. Greenlee	Waynesville.

WASHINGTON COUNTY.

C. K. Andrews	Heslop.
Ellis Fleming	Wingett Run.

WAYNE COUNTY.

W. F. Oldroyd	Shreve.
W. S. Battles	Shreve.
C. L. Kinnaman	West Salem.
B. M. McCaulay	West Salem.
E. E. Ash	Fredericksburg.
David Merring	Springboro.

WILLIAMS COUNTY.

G. E. Starner	Blakeslee.

WOOD COUNTY.

G. Higgins	Bowling Green.
W. M. Tuller	Bowling Green.
U. A. McKendree	Bowling Green.
John H. Rheinfrank	Perrysburg.

WYANDOT COUNTY.

I. N. Bowman	Upper Sandusky.
A. H McCrory	Nevada.
R. L. Souder	Nevada.
J. M. Wilcox	Nevada.
J. Odenbaugh	Wharton.
F. W. Brayton	Carey.
D. W. McConnell	Marseilles.

ANNUAL ADDRESS

OF

T. CLARKE MILLER, M. D.,

President of the State Board of Health.

DELIVERED IN COLUMBUS NOVEMBER 17, 1887.

ANNUAL ADDRESS OF T. CLARKE MILLER, M. D., PRESIDENT OF THE STATE BOARD OF HEALTH.

After the State Board of Health has been in existence a year and a half, it may be interesting and profitable to look over the work attempted and accomplished, as well as to look forward to what is to be undertaken in the future.

The act creating this Board conferred little or no power; and it is perhaps legitimate to infer that the intention was that its work should be educational. If this was the interest of our legislators, their wisdom may, in the light of our experience, well be commended. It is natural, I suppose, for men, as individuals and as organized bodies, to enjoy being invested with authority; and yet it is, perhaps, best that the untrained hand should wield the minimum measure of power. No fault should be found with legislators for exercising caution in the inauguration of a new work in a new field, which must be pushed to success or failure by men, who, in the nature of things, could not be expected to at all fully appreciate either its magnitude or importance. The Board appointed under this act, after carefully searching for its powers, conferred by the act, discovered that under ordinary circumstances it simply had none to speak of. Its duties are set forth pretty clearly in the second section of the act, as follows:

> They shall make careful inquiry in respect to the causes of disease and especially the invasion or spread of any infectious, or contagious, epidemic, or endemic disease, and investigate the sources of mortality, and the effects of localities, employments conditions, ingesta, habits, and surroundings on the health of the people; and shall investigate the causes of diseases occurring among the stock and domestic animals of the State, the methods of remedying the same by quarantine or otherwise, and shall gather information in respect to such matters, and kindred subjects for dissemination among the people. They shall advise officers of the government, or other State boards, in regard to the location, drainage, water supply, disposal of excreta, heating and ventilating of public buildings. They shall collect and preserve such information relating to forms of disease and death as may be useful in the discharge of the duties of said board

The main object sought seems to be that the people may be instructed and informed in all matters bearing on the prevention of disease and the preservation of health, and on these lines the Board has endeavored to work. So far the main effort has been to instruct the people and awaken an interest in sanitary matters. Numerous circulars have been issued, aiming to enlighten the people as to the management of disease, and the measures to be employed to guard against its onset.

These circulars have been in popular language, shorn of all technicalities, and, for this reason, as well as on account of their brevity, open to criticism from a professional point of view. When we consider, however, that the object had in view was to place in the hands of health officers and others, for distribution among the people, the essential points in the management and prevention of the diseases treated of, in small space and simple terms, these circulars are probably free from serious faults. At any rate, they have been well received by the people, and, to a gratifying extent, approved by the physicians of the State, and the Board has good reason to believe they have done much to awaken the people to the importance of measures and precautions outside of the ordinary medication of the diseases treated of. The people are becoming more and more impressed with the truth of the old adage, that "prevention is better than cure"—better, because safer, more comfortable and less expensive. The Board ought to continue this policy of issuing circulars on such subjects as are calculated to instruct and enlighten the people; and, in order that they may have the greatest possible value to the people, great care and labor should be given to their preparation.

CORRESPONDENCE.

An extensive correspondence has been kept up by the Board, through the Secretary and individual members, in answer to inquiries from professional men and others, in all parts of the State, relating to questions of hygienic importance, and the weekly reports of prevailing diseases, though not nearly so numerous as is desirable, serve to give a pretty fair index to the distribution of disease in the State.

GROWTH OF INTEREST IN SANITARY MATTERS.

The Board has been much encouraged, and generally aided in its work, by the active interest taken by many physicians, as well as a great many non-professional citizens, while on the other hand we have been greatly disappointed in finding a great many physicians indifferent, and a few antagonistic to the Board and the work it has undertaken to do. The tendency to truculent criticism probably reached its climax when an eminent member of the profession, in a meeting of the Ohio State Medical Society, realizing his prominence and influence, bitterly assailed the personnel of the Board, and the motives which ruled in its selection. A resolution which appears in the "subsequent proceedings" indicates the profound impression made by the eloquent assailant of the Board.

The Board may congratulate itself on the fact that the interest of the public—professional and lay—in questions pertaining to the preservation of health and the prevention of disease, has wonderfully increased since its organization, and we may perhaps be justified in the opinion that our efforts have contributed considerably to this awakening of interest in sanitary matters.

It has been the policy of the Board to encourage, as far as possible, the discussion of sanitary questions in medical societies, teachers' institutes, etc., believing that an interest in these questions awakened in such organizations cannot fail to be fruitful in the extension of sanitary knowledge among the people in general. It is especially desirable that, not only every physician, but every teacher, and, in fact, learned men of all professions, should become, so far as it is possible, qualified as advisers in all questions having a bearing on the preservation of health. Without this it will never be possible to educate the people up to a realization of the importance of wholesome food, good water, and pure air, the fundamental requisites of health.

STATE SANITARY ASSOCIATION.

The work of the "State Sanitary Association" is worthy of special consideration on account of its annual contribution of many valuable papers to current sanitary literature; papers, many of which are deserving of a much more ex-extended circulation; the people of the State would undoubtedly be greatly benefitted by having access to these papers and discussions.

It is hardly conceivable that self-agrandizement should be the animus of any considerable proportion of the membership of this association; on the other hand, it cannot be doubted that, in the main, its members are actuated by a desire to promote the best interests of the people; this being the case, it is to be hoped that some satisfactory way may be found to place the more important of these papers within the reach of the people without expense to the writers. I would respectfully commend this matter to the consideration of the Board.

VITAL STATISTICS.

My predecessor in office, as well as the Secretary of the Board, has called your attention to the inadequacy of the laws relating to the collection of vital statistics, and the unsatisfactory results of the methods employed under these laws. Statistics can be of little value unless an approach is made to accuracy, or at least, the errors are palpable and uniform. It is desirable that the manipulation of statistics should, at as early a stage as possible, be entrusted to men who have a fairly intelligent conception of the purpose of their collection. It is probable that nine out of ten of the assessors have but a very vague idea of the usefulness of the data they are required to collect, the majority, no doubt, suppose it to be simply so much trouble to no purpose; and the blanks furnished are not so well calculated to secure intelligent, or even good routine work as they might be. There is reason to believe that many of the probate judges are no less lax in their requirements than the assessors are in the performance of their duties. Many of the people, as well as most of the officials, can see the convenience of having election statistics, and derive some satisfaction from a comparison of the hog census of one year with that of another, and yet those who attach importance to the birth and death rate, that is, the *human* birth and death rate, are greatly in the minority, and this great State is more profoundly moved by a local outbreak of hog-cholera than by the prevalence of half a dozen preventable diseases among the citizens and their children; hence a somewhat tedious educational process must be gone through before the average citizen is brought to realize the importance of sanitary measures. Adequate laws must necessarily be inoperative or burdensome to those who have no conception of their necessity; so it seems to me that the important question for the State Board of Health for the present is, how best to contribute to the development of interest and the growth of knowledge in sanitary science.

SANITARY CONVENTIONS.

During the past year the Board has inaugurated what seems to be a very effective educational agency, the holding of sanitary conventions These conventions can be held at small expense to the State, considering the great good that may be accomplished, not only in awakening the people but in bringing forward leaders in local sanitary work. I am inclined to think that the Board will make a great mistake if it does not pursue this particular line of work with more energy of purpose than it has heretofore shown.

BOARDS OF HEALTH.

The lack of local boards of health is a deplorable hindrance to the work of our Board. Under the present law city councils generally choose *not* to appoint boards of health, preferring to control, within themselves, the expenditure of the city funds, and it is not an unheard of thing for a city council to vote a board of health out of existence on account of an expenditure of money, quite reasonable in amount, to control an epidemic of small-pox; of course this was done after the epidemic was controled.

Existing boards of health are perpetuated, or otherwise, at the will or whim of men who, too often, have but a meagre conception of the purpose and work of such a board; men who prefer to expend the people's money in ways that appeal to the tax-payer's eye, rather than in work that often only appeals, negatively, to his nose. Although the statutes aim to secure to boards of health full liberty of action, it is impossible, under the conditions referred to, to have that independence and liberty of action which is necessary to efficiency.

Until such time as proper legislation can be brought about, peristent efforts should be made to educate the people to that degree that will demand the protection of efficient boards of health in every town and city; in the meantime sparing no effort to secure, at least, such legislation as will make it mandatory on councils of all municipal corporations to maintain boards of health. Money is expended in large amount and with a free hand, for magnificent and costly apparatus for the extinguishment of fires, but the daily succession of funerals following preventable diseases only serves to tighten the grip of the official hand on the municipal purse, unless, indeed, the disease be of such a nature as to divert the stream of buyers to other towns.

A board of health in every town would be of inestimable value to the people of the State; yet, with even all this secured, there are very many matters of great sanitary importance, which, in the very nature of things, cannot be effectively dealt with by local boards, a few of which may be noticed here; for instance.

THE POLLUTION OF WATER COURSES.

The work of the board, as set forth in the report of last year, clearly shows the necessity of greater vigilance and energy in protecting our streams from pollution, and the State might wisely make some effort to protect them from extinction.

Many of the small creeks have become dry-ways during the summer months, the larger creeks and smaller rivers have degenerated into mere rivulets, except in seasons of rain, when, from the suddenness of their rise, they become destructive and dangerous. It is urgently important that the State should take some steps to preserve these water courses from extinction as well as from pollution—a calamity, little, if at all, less to be dreaded, for we might well question the desirability of preserving water courses that are rapidly taking on the character of open sewers. The influences and agencies which are operating to dry up our streams should be seriously and carefully studied, with a view to remedy, while wanton pollution of the waters should be dealt with most vigorously. It should be made easier for citizens, living along the streams, to maintain their rights as against those who pollute the waters higher up.

Care ought to be taken to instruct the people in the importance of purity in the water used for culinary and drinking purposes, and the hardly less importance of pure water for stock; the liability of wells becoming contaminated by the percolation of filth through the soil from the surface and the best methods of constructing cisterns, in order that they may secure water as pure as possible from the rain-fall.

INFIRMARIES.

There is room for a great reform in the sanitary condition of infirmaries. The people, for whom these institutions are intended to provide, are helpless in the hands of the management, and are not generally considered a valuable class to the State. It is no less the duty of the State, however, to see that they are properly housed and fed, and that their surroundings are hygienically good. Sanitary law is likely to be constantly violated by too great crowding, neglect of ventilation and improper or insufficient food.

There is reason to fear that the condition of some of these institutions is as unwholesome in a moral as in a sanitary sense, owing to a failure to provide properly separated quarters for the sexes and for the incurable insane. The latter class ought to be provided for in separate institutions, constructed and managed with special reference to the peculiar necessities of these unfortunate people.

PRISONS.

Prisons constitute another class of institutions, in the construction and care of which hygienic principles are likely to be ignored. The annual inspection of county jails, by the grand juries, provided for by law, is no doubt, in a great many instances, merely formal, and of little value by reason of the lack of such qualifications on the part of the members as would enable them to discover sanitary defects, other than those most palpable and consequently least dangerous. This work is of such a nature and of such importance, as to demand the attention of men specially skilled in sanitary principles and practice. Your Board might well address itself to the question of securing better results in this direction.

STATE INSTITUTIONS.

Great good could be accomplished by a thorough sanitary inspection of all the institutions and public buildings belonging to the State, and would soon lead to legislation requiring the submission of all plans for such structures to proper sanitary authority for approval.

In the location of State and county public buildings, as well as in their construction, the most careful attention ought to be given to the most important of all considerations, the health of the prospective occupants. When a building has been constructed without regard to proper drainage, water supply, heating and ventilation, it becomes an extremely difficult and expensive matter to correct these faults, and may even be impossible, while, on the other hand, a building properly located and planned, with reference to these considerations, is little, if at all, more expensive, in the first instance, than if these features were not neglected.

FAIR GROUNDS, ETC.

Fair grounds and summer resorts, being only intermittingly used, are generally eminently unsanitary in their appointments and surroundings. Little attention, if any, is paid to them by local authorities. The management, generally, knows little and cares less about conditions unfavorable to health, and allows a state of indecent filthiness to become progressively worse as the season advances. These places ought, by some means, to be carefully watched and the managers compelled to keep their premises in such condition as not to be a constant threat to the lives and health of those who visit them. And in going to and from these places the people have need of protection from the dangers growing out of overloaded excursion trains and boats. In some way, and by all means, a higher appreciation of the sacredness and intrinsic value of human life should be secured.

PREVENTABLE DISEASES.

The effectiveness of the work of the Board could be greatly increased by a closer investigation of outbreaks of preventable diseases in different parts of the State. During the past year there have been a great many instances where great good could have been done by a visit and inspection by a representative of the Board. This work, if done by members of the Board, must be done at great personal sacrifice, as the compensation allowed by law does not justify the members in giving attention to work except that which is of the most pressing necessity, and illiberal and preposterous constructions put upon the law creating and governing the State Board of Health, by unfriendly officials, have been well calculated, if not intended, to discourage anything in the way of aggressive activity. One of two things is, in my opinion, urgently required, in order to secure the fullest efficiency of the Board, and the greatest benefit to the people—either to allow such compensation as would in some measure justify members of the Board in giving more time and attention to the work or to employ competent men, as sanitary investigators, to give all their time, or as much as might be necessary, to the work; for it is already amply demonstrated that the people's money cannot be more profitably expended in any other direction than in the protection of life and health.

INSPECTION OF SHOPS.

It is eminently proper that the workman should be protected against unnecessary exposure to dangerous machinery, for the State is alike robbed by the unnecessary sacrifice of life whether through the agency of a buzz saw or a disease germ. The inspection of factories and shops should, first and most important, be a *sanitary* inspection, by a man expert in sanitary science and practice.

The State which cannot afford to neglect the education of its children might well and consistently take a brave forward step in the direction of protecting the health and lives of its citizens. The sentiment of the immortal declaration loses none of its force as the years grow old, and *first* among inalienable rights it places *life.*

SENSATIONALISM.

While the Board has tried to be faithful to its duties, it has avoided, as far as possible, sanitary sensationalism, believing that work in the sanitary field defeats itself when people are encouraged to believe that every bite of food they eat, every drop of water they drink, and every breath of air they breathe, is at the imminent peril of their lives. Though the adulteration of food is by no means uncommon, and those engaged in this villainous work ought to be zealously hunted down, vigorously prosecuted and severely punished, yet the people need not be deprived of the comfort there may be in the fact that very many food adulterants are not seriously dangerous to health or life, otherwise the rascality would soon strangle itself. The flesh of healthy animals is very rarely dangerous, and the most serious dangers to be apprehended are eliminated by proper cooking. Water, though not often really pure, and frequently far from it, is not always, by any means, teeming with monstrous and destructive disease germs. Milk, though quite liable to degenerate into offensive and even poisonous swill, is, when derived from healthy cows and handled with reasonable care, one of the very best and safest articles of food known for old or young, sick or well, regardless of the season of the year.

While the people are to be instructed in all matters pertaining to the preservation of health and the precautions and measures necessary in order to guard against disease, it is perhaps best that they should not be taught to wholly distrust all the necessaries of life.

THE NATURE, CAUSES AND PREVENTION OF CHOLERA.

BY

WISE, M. D.,

Chairman of the Committee Epidemic and Endemic Diseases and Quarantine.

THE NATURE, CAUSES, AND PREVENTION OF CHOLERA.

BY S. P. WISE, M. D.

The occurrence of Asiatic cholera in Egypt in 1883, succeeded by an outbreak of the disease in France, Italy, and Spain in 1884 and '85—where at present it is still lingering on the Mediterranean shores, together with its appearance in South America this summer, and the fact that at the time of this writing two vessels are detained in quarantine in the New York harbor, with their crew afflicted by the most virulent form of the disease, all indicate unerringly that ere many more seasons have elapsed the United States will be numbered among the cholera stricken nations. Possibly so ominous a prediction will be regarded as the utterance of an alarmist, but, indeed, it requires no prophetic vision to see the handwriting on the wall, unless all experience in the progress and development of epidemics of this disease since 1832 is worthless and productive of no lesson. The history of cholera in the past has been, that it spread over the world like a wave, from east to west, differing only in its rate of progress, but eventually invading all civilized countries that were having any social or commercial intercourse. It has bid defiance in its direful march, to the most rigid quarantine regulations that could be instituted, and has baffled the most strenuous efforts at contravention that science and human artifice could devise. The recent experience in Europe has been no exception to this rule. With these facts confronting us, the important question whether cholera can be averted, and if not, what are the most effectual means of preventing its spread and limiting its ravages, should seriously engage our attention.

It is perhaps not within the scope of this paper to dwell at length upon the various theories and widely diversified opinions that are held in regard to the nature and mode of propagation of this disease.

It is important, however, that we, as sanitarians, should have as clear a conception as possible of the nature and ultimate cause of epidemic diseases, in order that we may reason intelligently upon the various preventive measures that are in vogue, and attain the utmost efficiency in their application. Moreover it is quite evident that the fundamental principles of all preventive measures are based upon a correct understanding of the natural history of the disease we are trying to avoid or intercept.

We would naturally suppose that a disease which has been so terrible in its ravages, and so appalling in its nature during the past history of the world, would, ere this, be thoroughly understood; that the accumulated experience of the past with its lasting impressions aided by scientific investigation stimulated to its utmost by the vital importance of its researches, would have led to definite conclusions, and enabled us to comprehend, with clearness and accuracy, the nature of the disease in all its relations.

It is not surprising, however, that our knowledge in regard to this, as well as all other epidemic diseases, is limited in extent, when we reflect upon the obscurity that surrounds the conditions of their development, and take into account the numerous factors which are directly or indirectly accessory thereto. When we take into consideration that every country presents different conditions as to predisposition or immunity with reference to epidemics, we can readily understand how numerous are the difficulties to be overcome in their study, and why conclusions arrived at are frequently most adverse and contradictory.

Besides the nature of the disease with which we are contending, the prevention of an epidemic of cholera depends upon a great variety of circumstances, peculiar to the country in which it occurs. The frequency of its commercial relations and density of its population; the receptive tendency of its people, whether from habits, race, or sanitary condition; climate, locality, and topography, all are important considerations in accounting for the incursion and development of an epidemic.

The sanitary researches for the past twenty years have greatly modified the views held in regard to the intimate cause of cholera. The disease is no more ascribed to supernatural agencies or to visitation of divine wrath against which we cannot contend; but while rapid progress has been made in the discovery of many of the accessories which favor its portability and diffusion, yet we are compelled to admit that much remains that is "intangible and hypothetical." The nature and manifestations of the disease are often so mysterious and irregular, and the experiences of neighboring localities have been so widely different, that it is next to impossible to discriminate between what has been proven and what is merely conjectural.

It will have been observed by those who are familiar with the literature of Asiatic cholera and the scientific researches relating thereto, that there is a substantial agreement on all sides that it is emphatically an infectious disease of an epidemic character. There is, therefore, no difference of opinion in regard to the urgent necessity of perfect cleanliness, and the paramount importance of all sanitary measures that are conducive thereto. They all insist that the highest standard of health that can be attained by the best possible hygiene will largely mitigate, if not entirely prevent the occurrence of an epidemic. While, on the other hand, imperfect drainage, badly constructed houses, over-crowded population, sewage, accumulation of filth, and all its concomitants, are the favorable conditions which invite the disease and favor its propagation, its severity and diffusion, depending upon and being commensurate with the degree in which those factors exist.

It is gratifying to know that there is perfect unanimity among sanitarians in regard to these essential conditions, which favor the development of the disease, as adverse opinions could not else but prove hazardous in time of an epidemic. There is quite a disagreement, however, among scientists respecting the elements which are mainly concerned and are directly operative in the development of disease in its epidemic form.

There are those who believe in the meteorological hypothesis, ascribing the epidemic influence to some obscure atmospheric condition which causes the epidemic, or at least is contemporaneous with it. On the other hand, there is a class who ignore this atmospheric agency, and contend that epidemics are caused solely by the wide-spread distribution of the germ of the disease by human agency or commercial intercourse. The meteoric hypothesis is based upon the following phenomena and historical facts that have been observed by French scientists and others who have given most attention and credence to this theory.

They assert that at these periods when cholera is epidemic the earth passes through portions of space which are especially pervaded by meteoric bodies, which exert a malign influence upon the atmosphere of our planet. These meteoric phenomenas are said to have been quite remarkable in brilliancy and profusion at the time of the scourge which prevailed in Florence in 1348; and the epidemics of 1798, 1817, 1818, 1832, 1854 and 1865, were all attended by them in a marked degree. These meteoric phenomena were also accompanied by certain physical disturbances, such as earthquakes, tornadoes and volcanic eruptions. For instance, in 1883, when cholera raged in Egypt, there occurred a violent earthquake in Ischia, and also one, attended by eruptions, on the coast of Java. At the same time the remarkable phenomena of red luminous twilights were observed in Europe and America for a long time in succession. Great storms of wind and rain, with violent fluctuations of the barometer, occurred in Spain, Austria, and Poland, on the same day that cholera broke out in Marseilles. It was also noticed, during the epidemic in France, that there was some mystérious taint or unwholesome influence in the atmosphere which affected persons even in localities where the disease did not prevail.

It was found, for instance, that diarrhœa and digestive derangements were induced by eating ordinarily wholesome fruits and vegetables, even if they were carefully cooked and prepared. Again, the sudden disappearance of certain birds and insects from the whole district of southern France, and their failure to return before the epidemic had entirely subsided, was regarded as one of the evidences which indicated some abnormal condition of the atmosphere.

This obscure atmospheric influence was also observed in the United States, prior to and at the time of the epidemic of 1866 and '67, at St. Louis; and the meteorological theory has strong advocates among our most scientific men. It was observed by persons living in the Mississippi Valley that the water of that river was absolutely so offensive, after having stood in a vessel for several hours, that no one could drink it. At St. Louis, the water was collected several miles above the city, where the current was running at least four or five miles an hour. A short distance above this point the Mississippi and Missouri rivers unite, and the combined waters flow a distance of 5,000 miles. At New Orleans, 1,000 miles below St. Louis, this water had always been used as drinking water by all sailing vessels, and was preferred because it remained pure on voyages from New Orleans to Liverpool and return. The contamination of so immense a body of water was a total mystery, but the fact remains that it existed, and was coincident with and prior to the cholera epidemic. Furthermore, no one would be willing to believe that this fetid condition could have been due to a germ which had been deposited at the headwaters of both rivers, especially at a time when no cholera existed.

Another argument adduced by those who advocate atmospheric epidemic influence is the analagous influence which existed during the prevalence of the plague. Formerly, when this scourge prevailed in certain parts of Europe, it was observed that in sections where the disease had not yet shown itself, nonfebrile buboes were quite common, and preceded for some time the outbreak of the disease. So, also, with cholera, before its appearanec in its worst form, there is a period varying from weeks to months where diarrhœal diseases are far more common than usual. This is called the "incubative epidemic period" by the non-contagionists, and is attributed to a cholera-wave of slight intensity; while those who believe in a specific contagion, account for this diarrhœal tendency of the actual presence of the cholera germ, which, although in a state of feeble existence, if it meets with its favorable elements—filth, heat, and moisture—is rapidly propagated, gains in intensity and deadliness, and creates an extensive epidemic.

This, then, leads us to a brief consideration of the germ theory of the disease, which is accepted by the mass of scientists, and is indorsed by the concurrent testimony of a large number of writers of different nationalities. The supposed cholera-germ has often been discovered, forgotten, and again re-discovered in some new form; but the credit of placing it upon a substantial, plausible basis belongs to Dr. Koch, of Germany, who published the results of his researches but a few years ago. While it is true that his doctrine has not not been accepted in its entirety, yet he has pointed out the paths of future inquiry, and his theory harmonizes so well with the natural history of the disease, that it merits the distinction of being the best explanation that has yet been offered. It has been abundantly proven by Koch and his followers that the contagious element of the disease consists of a microbe or bacillus, which is contained in the human dejections, and that these discharges from the stomach and bowels of cholera patients become a prolific source of contagion, providing they gain access to food or drinking water, and are taken into the stomach. These germs thrive enormously in alkiline fluids containing decomposing organic matter when aided by heat; hence, they have a great predilection for the intestinal tract.

In the healthy human stomach the microbe does not thrive well, for the reason that the chemical reaction therein is acid. It seems, therefore, to be a matter of belief among physicians that a person who has led, and continues to lead, a well regulated life in matters of diet and everything pertaining to personal hygiene, has little to fear, as a healthy stomach will digest the germ without inconvenience, and thus prevent it from reaching the intestines. Even a healthy intestine may resist the action of the germ, sterilizing it to such an extent as to escape with only a simple catarrhal diarrhœa. In persons, however, who are afflicted with catarrh of the stomach, or some of the minor digestive disorders, the germ finds a fertile soil, and multiplies with marvelous rapidity. Under such favorable circumstances it has been demonstrated that one germ will produce sixteen millions in twenty-hours. An instance is recorded in which nineteen men accidentally drank of water containing rice-water cholera discharges, which had been added from day to day for microscopical examination. Five took cholera and three died; the rest escaped. It was discovered that those who fell victims to the disease had bad digestion and entirely empty alkaline stomachs. Those who escaped had good digestion; their diet had consisted of good, wholesome food, and they had abundance of acid gastric juice, which evidently killed and digested the germs. The disease in its course of destruction may, therefore, be compared to a silk-worm which attaches itself to a mulberry leaf, and devours what is adapted to its wants, and then passes on to another. So with the cholera microbe, its ravages are governed by the number of persons within its reach, who, from imprudence or digestive disorders, are predisposed to it.

The strongest argument in support of the germ-theory, is the fact that whatever may be the infectious principle *there is no instance known in which it has traveled or been transported faster than men have traveled.* The truthfulness of this highly important fact is universally conceded, and constitutes the most valuable part of our knowledge in relation to the disease and its prevention. Whatever influence atmospheric conditions may have upon the severity of the disease by imparting unusual activity to the contagium, and favoring its rapid propagation, it is quite evident that they can contribute very little toward its transmission from person to person, or from one locality to another. The recognition of the portability of the disease suggests clearly the rules of action that must guide us in our efforts at prevention. A writer very aptly says: "*All preventive measures are based upon the assumption that the virus or germ of cholera is a living organism, capable of transmission through water, food, clothing, or personal contact, and like all living matter is susceptible of death.*"

The first outbreak of cholera in Europe occurred in 1831 It was transmitted by caravans along the sparsely settled district of the Caspian Sea, and was eighteen years in making the transit from India to Eastern Europe. All later epidemics could always be traced along the channels of intercourse between countries, being carried by steamship lines, or whatever means of communication employed. It is universally conceded that India is the native home of cholera. It is its birth-place, and the cradle in which it is rocked The section of country which is its recognized hot-bed, is situated at the delta of the Ganges, and comprises the limited area of about 300 square miles. In this locality the disease has existed for centuries. It is a marked feature of cholera that whenever people aggregate in large numbers, huddled and crowded together in a filthy condition, with insufficient and unwholesome supplies of food, the disease assumes its most virulent form. We can, therefore, easily understand how the germs of the disease are propagated and kept alive in India, when we take into consideration the horrible unsanitary conditions which arise during the grand pilgrimages that are called for by the religious belief of that people. The following graphic description of the sanitary condition of the country during those festivals is taken from a report presented by Dr. D. B. Simmons, Chairman of the Yokohama Foreign Board of Health.

"The drinking water supply is derived from wells, so-called 'tanks' or artificial ponds, the water-courses of the country. The wells generally resemble those in other parts of Asia. The tanks are excavations made for the purpose of collecting the surface water during the rainy season, and storing it up for the dry. Necessarily, they are mere stagnant pools. The water is used, not only to quench thirst, but is said to be drank as a sacred duty. At the same time, the reservoir serves as a large washing tub for clothes, no matter how dirty or in what soiled, and for personal bathing and ablution. Many of the water-courses are sacred; notably the Ganges, a river 1,600 miles long, in whose waters it is the religious duty for millions, not only those living near its banks, but of pilgrims, to bathe and to cast their dead. The Hindoo cannot be made to use a latrine. In the cities he digs a hole in his habitation; in the country he seeks the fields, the hillsides, the banks of streams and rivers, when obliged to obey the calls of nature. Hence it is, that the vicinity of towns, and the banks of the tanks and water-courses are reeking with filth of the worst description, which is of necessity washed into the water supply with every rain-fall. Add to this, the misery of pilgrims, their poverty and disease, and their terrible crowding into the numerous towns which contain some temple or shrine, the object of their devotion, and we can see how India has become and remains the hot-bed of the cholera epidemic. In the United States official report the horrors incident upon the pilgrimages are detailed with appalling minuteness. W. W. Hunter, in his Orissa, states that twenty-four high festivals take place annually at Juggernaut. At one of them, about Easter, 40,000 persons indulge in hemp and hasheesh to a shocking degree. For weeks before the car festival, in June and July, pilgrims come trooping in by thousands every day. They are fed by the temple cooks to the number of 90,000. Over 100,000 men and women, many of them unaccustomed to work or exposure, tug and strain at the car until they drop exhausted, and block the road with their bodies. During every month of the year a stream of devotees flows along the great Orissa road from Calcutta, and every village for three hundred miles has its encampments. The people travel in small bands, which, at the time of the great feasts, actually touch each other. Five-sixths of the whole are females, and ninety-five per cent. travel on foot, many of them marching hundreds and even thousands of miles, a contingent having been drummed up from every town or village in India by one or other of the three thousand emissaries of the temple, who scour the country in all directions in search of dupes. When those pilgrims who have not died on the road arrive at their journey's end, emaciated, with feet bound up in rags, and plastered with blood and dirt, they rush into the sacred tanks or the sea, and emerge to dress in clean garments. Disease and death make havoc with them during their stay: corpses are buried in holes scooped in the sand, and the hillocks are covered with bones and skulls, washed from their shallow graves by the tropical rains. The temple kitchen has the monopoly of cooking for the multitude, and provides food, which, if fresh, is not unwholesome. Unhappily, it is presented befo e Juggernaut, so becoming too sacred for the minutest portion to be thrown away. Under the influence of the heat, it soon undergoes putrefactive fermentation, and in forty-eight hours much of it is a loathsome mass, unfit for human food. Yet it forms the chief sustenance of the pilgrims, and is the sole nourishment of thousands of beggars. Some one eats it to the very last grain. Injurious to the robust, it is deadly to the weak and way-worn, at least half of whom reach the place suffering under some form of bowel complaint. Badly as they are fed, the poor wretches are worse lodged. Those who have temporary shelter of four walls are housed in hovels, built upon mud platforms, about four feet high, in the center of each of which is the hole which receives the ordure of the household, and around which the inmates eat and sleep. The platforms are covered with small cells, without any windows or apertures for ventilation, and in these caves the pilgrims are packed, in a country where, during seven months out of the twelve, the thermometer marks from 85 to 100° Fahrenheit. Hunter says that the scenes of agony and suffocation enacted in these hideous dens baffles description. In some of the best of them, thirteen feet long by ten broad, and six and one-half high, as many as eighty persons pass the night. It is not, then, surprising to learn that the stench is overpowering, and the heat like that of an oven. Of 300,000 who visit Juggernaut in one season, 90,000 are often packed together for a week in 5,000 of these lodgings. In certain seasons, however, the devotees can and do sleep in the open air, camping out in regiments and battalions, covered only with the same meagre cotton garments that clothe them by day. The heavy dews are unhealthy enough; but the great festival falls at the beginning of the rains, when the water tumbles in solid sheets. Then lanes and alleys are converted into torrents or stinking canals, and the pilgrims are driven into the vile tenements. Cholera invariably breaks out. Living and dead are huddled together. In the numerous so-called corpse fields, around the town, as many as forty or fifty bodies are seen at a time, and vultures sit and dogs lounge lazily about gorged with human flesh. In fact, there is no end to the recurrence of incidents of misery and humiliation, the horrors of which, says the Bishop of Calcutta, are unutterable; but which are eclipsed by those of the return journey. Plundered by priests, fleeced by landlords, the surviving victims reel homeward, staggering under their burdens of putrid food, wrapped up in deity clothes, or packed in heavy baskets or earthenware jars. Every stream is flooded, and the travelers have often to sit for days in the rain on the bank of a river before a boat will venture to cross. At all these points the corpses lie thickly strewn around (an English traveler counted forty close to one ferry), which accounts for the prevalence of cholera on the banks of brooks, streams, and rivers. Some poor creatures drop and die by the way; others crawl into the villages and halting places on the road, where those who gain admittance cram the lodging places to overflowing, and thousands pass the nights in the streets, and find no cover from the drenching storms. Groups are huddled under the trees; long lines are stretched among the carts and bullocks on the roadside, their hair saturated with mud on which they lie; hundreds sit on the wet grass, not daring to lie down, and rocking themselves to a monotonous chant through the long hours of the dreary night. It is impossible to compute the slaughter of this one pilgrimage. Bishop estimates it at not less than 50,000. And this description might be used for all the Indian pilgrimages, of which probably there are a dozen annually, to say nothing of the hundreds of smaller shrines scattered through the peninsula, each of which attracts its minor hordes of credulous votaries. So that cholera has abundant opportunities for spreading over the whole of Hindoostan every year by many huge armies of filthy pilgrims; and the country itself well deserves the reputation it universally possesses of being the birth-place and settled home of the malady."

The vast aggregations of the people within the borders of India would not, however, communicate cholera to Europe. There exists a far more potent factor which is directly responsible for its transmission to the civilized world.

Besides its vast heathen population India has also a large number of Mohammedans. It is one of the sacred duties of the Mohammedan creed that every believer must, once in his life time, visit the sacred shrine of Mecca in Arabia. These visits must be so arranged, as to time, that they all reach the shrine during the month of January. Formerly, when the journey was made by caravan, thousands perished from sickness and fatigue by the way-side. To die under such circumstances was regarded as a great favor in the eyes of the prophet. Caravans from India, Persia, Arabia, Syria, Turkey and Egypt came in contact, and met in one vast assemblage; often times over two hundred thousand were gathered at the shrine. The result was that on their return they carried the germs of cholera with them, and scattered them along their extended routes. This explains the slow course of the epidemic which reaches Europe by way of Russia and the shores of the Caspian sea. At present there are no more caravans composed of pilgrims to Mecca. This slow method of travel has been abandoned, and steamships have taken their place. But one journey is now made yearly, which starts at Cairo and goes by way of the Isthmus of Suez. The adoption of this speedy method of travel has opened up a new channel by which the disease may reach Europe, and has rendered its transmission more rapid, but has also made the contravention of the disease by quarantine more feasible. The magnitude of these excursions can be estimated from the fact that from sixty to one hundred steamers are employed in transporting this vast mass of humanity. These steamers bring them to Dejeddah, the seaport of Mecca, and there await their return, which is generally at the expiration of a month. After their return they re-embark them and distribute them to their homes over the entire Mohammedan world.

The number of persons who gathered annually at Mecca is variously estimated, but rarely placed under 150,000. If we can imagine this immense body of human beings, crowded together without any knowledge of sanitary precautions, insufficiently fed, with the poorest quality of food, in a climate and season where prolonged rains and cold are immediately followed by a tropical heat; drinking polluted water and exhausted by prolonged travel, we can readily comprehend how cholera may be propagated, and after their dispersal, how the germs may be distributed wherever they go.

In 1883 cholera broke out in Egypt. It made its first appearance at Damietta, which is the nearest Nile port to Port Said, and is situated at the outlet of the Suez canal. The Bombay Presidency, which has become secondarily affected from India, suffered severely from the disease that year, there being 37,000 deaths from this cause alone. Bombay merchants came to Port Said and Damietta to attend a great exposition which was held at those places, at which at least 15,000 strangers congregated, in addition to the 35,000 inhabitants. The principal source of water supply of Damietta is a canal which runs through the city, from one branch of the river Nile to another. Mosques and many houses are situated on the banks of this canal, and their sewage flows into it. Every mosque has a public privy, and also an ablution tank, in which all good Mohammedans must bathe before entering a holy place. The water could, of course, not fail to become greatly contaminated with choleriac discharges, and the result was a sudden and most violent outbreak of the disease. As usual, under such circumstances, a panic seized the people, and the 15,000 visitors, together with about 10,000 of the inhabitants, stampeded out of Damietta and carried the disease all over Egypt. It was only after all this had occurred that rigid quarantine was established, and a sanitary cordon placed around Damietta. It is of interest to note that this epidemic broke out at a time when the river Nile was low, and the water unusually bad, as has always been the case when cholera broke out in Egypt. The disease disappeared rapidly when the river rose and the impurities were all washed away.

On the 22nd of June, 1884, cholera broke out at Toulon. The disease was concealed for at least seventeen days, and its existence was not admitted until it was no longer possible to hide it. After a thorough investigation and considerable official dispute, it was finally determined that the disease had been imported by the French government vessel Sarthe, which had been employed in the expedition to Tonquin, China. It was proven that the ship had a fatal case of cholera on board before leaving Saigon, and on its return to Toulon it was admitted into port and placed in dock for repairs. Some reports state that the ship complied with the usual quarantine regulations, but this is disputed by others equally authentic. The city of Toulon is the principal naval and military station of France, and has a native population of about 70,000. The sanitary condition of the city is, to say the least, most wretched. It is closely built, and some of the buildings, fronting on narrow streets, are six and seven stories high, and are densely crowded with a filthy population. There are no under-ground sewers, but streams of water flow in the open gutters into which the people empty their night-soil and other filth, and it flows down into the harbor, which is almost tideless. In addition there are a great many open cess-pools in back yards, and it is customary to throw refuse vegetables and garbage into the dock. There being no tide to carry them away the harbor is absolutely choked with the accumlated filth of many years. The water supply is mostly taken from wells and cisterns. Toulon has always had a great deal of typhoid fever, and has been regarded, for generations back, as a breeding place for disease.

On the 27th day of June, five days after the appearance of cholera in Toulon, a student from the Lycèi, of that city, who had returned to his home in Marseilles, was taken with Asiatic cholera and died after an illness of eight hours. On the next day a custom house official succumbed to the same disease in a few hours. These two cases signalized the beginning of the epidemic in Marseilles. Although the fact was not officially announced, it is believed that cholera prevailed in Marseilles during the summer of 1883, and probably was imported from Egypt. The death rate for the month of July in that year, was 253, as compared with 157 for the same month of the preceding year. It is supposed that this increase fairly represents the number of deaths from cholera. By a collusion between the mayor and hospital physicians and sisters of charity, the disease was concealed and a panic averted. The disease was very mild in type, and there is no doubt but that every possible precaution was taken to keep it from spreading. The non-contagionists, no doubt, regarded this as the "incubative epidemic period" of the epidemic of the following year.

The city of Marseilles is much in advance of Toulon in respect to sanitary improvements. In fact it is said that she is a model of excellence in this regard. Her sewerage system, water supply, method of removing night-soil, and general cleanliness, are unsurpassed by any other European or American city.

Those improvements have been mainly effected since the terrible scourge of cholera she passed through in 1865; but like Toulon and most other Mediterranean cities, its harbor presents an insurmountable difficulty, and is a constant source of danger Its harbor is entirely artificial. The old port is simply a branch of a creek dredged out into a larger dock, with a narrow outlet to the sea. The new ports are large harbors inclosed by miles of pier and deepened to a navigable depth by dredging. These inclosed ports extend along the two-thirds of the shore front of the city and receive the entire volume of the sewage. The immense filth that is thus deposited sinks and festers until it is removed by dredging, which work is constantly in progress, and was only suspended during the time of the epidemic. Poisoned thus by a constant influx of sewage, the waters have become putrid and pestilent, and it is a question whether a vessel moored for even a day in this harbor, or freight that may be landed or taken on board under such conditions, may not become infected.

At the time of the first appearance of cholera, there was a period of ten days of intense sultry heat, which was accompanied on the evening of the 28th day of June by a dense swarm of mosquitoes, which descended upon the city, and were driven off by fires of pitch and rosin. It was remembered that a similar heat, accompanied by mosquitoes, had occurred at the beginning of the great epidemic of 1865. This circumstance produced a panic among the inhabitants, and many thousands of them fled. The rapidity of development and severity of the disease were attributed to the intense, stifling heat, which prevailed at the time. The death rate increased from eight on the third day to seventy-four on the eleventh day of its prevalence. Another feature of the malady was that it made its sudden appearance in all parts of the city at once, and many of the fugitives, belonging to the wealthier classes, carried the disease with them, and died after leaving the city. In the meantime, commerce and manufactories, and all local business, became perfectly prostrated. This resulted in a vast army of unemployed and destitute, which increased in number day by day. The city of Paris prohibited the importation of fruits from the infected districts; this rendered peaches, plums, and apricots, which abounded that season, almost worthless. It was soon discovered that of the daily new cases of cholera, the large majority occurred among the poor laborers and their families, who, deprived of work and driven to the last extremity by hunger, had devoured those fruits in quantities, and drank water from the public hydrants. When this fertile cause of the epidemic was recognized by the authorities, they at once established soup kitchens, at which a permanent free dinner of wholesome food was served, and bread and meat were distributed to all the needy. It was plainly demonstrated that the adoption of this important measure of providing food for the destitute reduced the death rate of Marseilles about one-third, notwithstanding the intense, sultry heat which still prevailed at this time. When cool weather set in, there was still a further decrease in the number of new cases, and the disease became milder in type. After the outbreak in Marseilles and Toulon, both cities were literally washed with water and disinfectants; railway cars, stations, omnibuses, and carriages were fumigated and disinfected, and the smell of chlorine, sulphur, and carbolic acid were perceptible everywhere. The eminent German savant, Dr. Koch, who visited the cities during the epidemic, condemned the free use of water, on the grounds that moisture favors the propagation of the cholera-germs and keeps them alive.

The citizens of Marseilles set a valuable example in their systematic and efficient methods of caring for the afflicted by which other cities who may in the future have to deal with a cholera epidemic, may profit. Ambulance corps were organized, which patroled all quarters of the city, and provided immediate transportation for the sick. Industrial guilds and civic societies performed these services under official direction, and never faltered in the performance of their duties under the most trying and dangerous circumstances. In addition to this valuable aid, bureaus of medical assistance were established. These bureaus were managed by committees of volunteers, organized by the citizens of each district for the purpose of affording immediate medical relief at any hour, day or night. An office or depot was opened in a convenient location, at which one or more of the committee of physicians were stationed, ready to render assistance at a moments warning, and no matter how poor and wretched, the victims were promptly and faithfully taken care of. If the disease proved to be cholera, and the surroundings were favorable, they were treated at their homes; otherwise, they were sent to a hospital. Several important advantages were gained by this system that cannot be overestimated. In the first place, it was largely due to the efficient work of these bureaus that but few cholera victims died unattended; and, secondly, which is equally if not more important, it directed immediate official attention to the cleansing and disinfection of infected dwellings, and to the prompt isolation of the sick. The great importance of this medical surveillance will be obvious when the fact is known that the pestilence had, as usual, afflicted more severely the filthy and densely populated quarters of the city, inhabited by the poor and most ignorant classes. It was soon discovered that among many of these ignorant people there existed a superstition and dread of doctors. Some of them even conceived the idea that the doctors were hired by the government to poison them. They feared the vigorous remedies that were sometimes employed, and dreaded the hasty, rude burial in the common trench. They also protested against the fumigation of their premises. In consequence of these prejudies, they made every effort to conceal the true character of the disease, and would report deaths from cholera as due to other causes; and even physicians were not exempt from aiding in deluding the authorities. An important factor in the prolongation of the epidemic in the cities of France, was the return of the fugitives. The enormous exodus which took place in the first three weeks of the epidemic comprised about one-third of their population. Many thousands of these left home in the most precipitate manner, destitute of money or even changes of clothing. They scattered throughout the adjacent country, and took refuge in barns and outbuildings; some had no shelter, and most all were in a state of abject poverty. The majority subsisted on fruits and poorly cooked vegetables, and many barely escaped absolute starvation. As a necessary consequence they commenced to return to their homes at the first news of the abatement of the epidemic. In the presence of hunger and destitution, they disregarded all warnings of medical and civil authorities to remain away. Arriving at their homes they found their tenements damp from neglected ventilation, and, in many instances, infected by the disease. Food had become very expensive and difficult to obtain, and, as the benevolent and wealthy classes had all departed, there was no charity from private sources. The public finances had been strained to the utmost in cleaning the streets and tenements, and caring for the sick, and burying the dead. A contemplation of this picture of heartrending wretchedness will readily disclose the inevitable result. The return of these weak, emaciated, and dispirited unfortunates could not else but feed the epidemic into renewed vigor. Their physical and mental condition was such as to make them easy victims to the ravages of the disease, and many of them preferred death to a prolongation of their suffering.

It was observed during the prevalence of the epidemic in France that the disease spread quite irregularly, often passing by some village and attacking others in the near vicinity, and increasing or diminishing under different conditions of moisture, winds, and temperature. The explanation for this apparent waywardness was found to consist in the following fundamental conditions, which have long been known, but are worthy of record, for the reason that the disease attacked different localities in very exact proportion to the degree in which they existed:

1. "Porosity of the soil, which would allow choleraic dejections to penetrate to a sufficient depth to reach springs, wells, or other sources or channels of water used for domestic purposes.

2. "The facilities offered by drains, sewers, and water courses for the circulation of infected water under and among the dwellings of a village or city.

3. "The accumulation of fecal or other decaying organic matter infected by choleraic dejections.

4. Close, crowded, ill-ventilated dwellings, combined with unwholesome and irregular alimentation and neglect of cleanliness."

QUARANTINE.

If we assume that the contagion of cholera consists of a microbe or germ, which is communicated from person to person, and is transported from one locality to other localities, and from one hemisphere to another by means of human agency, it is self-evident that measures which restrain or inhibit commercial or social intercourse between different nations and localities must be of infinite importance. Let the soil be ever so favorable for the propagatien of the disease, if the germ does not gain access to it the disease will never be engendered. It, therefore, behooves the sanitarian to make a thorough study of the subject of quarantine in all its relations, and carefully estimate the value and importance of the various regulations and restrictions that have been adopted, in order that he may eliminate truth from error, and be able to judge of their efficiency or non-efficiency. The necessity of quarantine restrictions was recognized in the days of the ancient Jews, as will be observed by the following passage of Scripture, Levit., 13–46: "All the days wherein the plague shall be in him he shall be defiled; he is unclean; he shall dwell alone; without the camp shall his habitation be."

In early days, when scarcely the rudiments of sanitary science were understood, and contagion and infection were little comprehended, the quarantine laws required a detention of vessels for a period of forty days, as is indicated by the literal meaning of the term. Later on this time was limited to thirty days after the last exposure. The detention of vessels for such a period was a great embarrassment to commerce, and was as good a plan as could have been devised to perpetuate the disease among the passengers and crew. Under the light of accumulated experience these oppressive restrictions, based upon erroneous notions of the laws of contagion and infection, have been abrogated. The rules for the contravention of the disease that are now enforced, are based upon the period of incubation of the disease and its mode of transmission. Vessels are detained only for a sufficient length of time to undergo thorough cleansing and disinfection, and those passengers who are sick are isolated, while those who are well, but possibly infected, are secluded and placed under sanitary observation for a length of time equal to the outside limits of the incubative period of the disease. It will be, therefore, noted that the signification of the word quarantine as applied to-day, is by no means what it was formerly. Instead of merely a forty days' restriction, it now comprises the whole series of precautionary measures, restrictive as well as hygienic, that are employed in preventing the incursion and spread of an epidemic. Nor is it limited to the precautions that are taken at the port of arrival, but also includes the inspection of passengers and their effects at the point of embarkation. Quarantine, in its application to the prevention and restriction of cholera, is undoubtedly one of the most difficult problems that has engaged the attention of sanitarians. The experiences in different epidemics have differed so widely as to leave great room for diversity of opinion in respect to the efficacy of protective measures. The non-contagionists who attribute the spread of the disease to some obscure atmospheric condition, producing a so-called cholera wave, assert that it is a delusion and a snare for us to trust our safety to such inefficient protection as is afforded by quarantine measures; that they are simply sentinels on the outposts who warn us of the approach of the enemy. The advocates of this theory fully recognize that cholera has its home in India; that the large aggregations of people, with the attendant conditions—filth, poor food, exposure, etc., are the potent factors in its propagation; but that, notwithstanding these elements, how can we account for the fact that it is only at certain times that it extends itself beyond its confines, and becomes a wide-spread epidemic? In proof of the utter inutility of quarantine, they refer to the late experience in Egypt, France, and Italy, and point with derision to the numerous instances where it has failed in intercepting the progress of the disease, or in curtailing its area of destruction. They compliment the Academy of Medicine in Paris on the wisdom of their action, when they condemned the energetic and decisive measures that were adopted, and declared that cholera could not be stayed or limited. It is true that these arguments appear unanswerable and most difficult to refute; and we must admit that the cause of the periodic spread of cholera is mysterious and totally beyond our comprehension, except it be due to such occult atmospheric influence. It seems to me, however. that the truth lies in the happy medium, and those who harmonize the apparent contradictions, combining the theory of human portability with atmospheric agency as a "plus condition" beyond the microbe or bacillus, have obtained the nearest approach to the truth. I believe that atmospheric influence bears the same relation to an epidemic of cholera as sunshine and rain do to the growth and ripening of vegetation. Without these essential elements, the growth must fall short of maturity; but if they are present, and the seed is sown, and the soil is favorable, it will spring into rich luxuriance. A thorough review of the history of quarantine in its application to the prevention of cholera, will convince anyone that its failures have almost invariably been due to carelessness, or lack of promptness in the enforcement of its minor details. A careful consideration of the facts will show clearly that in each instance, where the disease was not stayed in its progress, there were some attendant circumstances which rendered quarantine restrictions impracticable, or else the proper efforts were not made to enforce its measures rigidly. There is no apparent reason why maratime quarantine, executed with a proper degree of vigilance, should ever fail in stamping out the disease, especially since the discovery of potent germicides, and the improved scientific methods of their application. In the case of land quarantine, however, we cannot expect such positive results, although its alleged inutility arises from the fact that, in the majority of instances, precautionary measures were not adopted until the disease had gained an uncontrolable foothold. It is self evident that whatever is to be accomplished in preventing an epidemic, must be done at the earliest possible moment, when the afflicted are few in number, and the infection is circumscribed in its limits. As before stated, the mass of the inhabitants of Damieta had fled before a rigid quarantine was established in Egypt; and on investigation, it was found that deaths from cholera had occurred during the month of May; whereas, none had been reported until the 21st of June. In many of the Egyptian towns the barbers, who shave and prepare the dead, are the first registrars of vital statistics. The principal barber of Damietta was among the first to die of the disease; hence, the records of the earliest deaths were all lost, and the fatal cases of infective diarrhœa were never recorded. During the first three weeks of the epidemic at Marseilles, it was estimated that over one hundred thousand persons left the city and scattered all over France, Italy and Switzerland. The entire community was in a state of uncontrolable frenzy, and fear seemed to madden the entire population. Naturally, those who lived in the immediate vicinity where the disease broke out, were the first to take their departure, and many of them carried the contagion with them. The disease was thus spread throughout the whole district, within a radius of 150 miles of Marseilles. We can readily imagine that it would be utterly impossible to stay such a powerful current of terror-stricken people; even a sanitary cordon would be ineffectual, except in those localities where the population is limited, and the ways of communication are few and easily guarded. The manner and means by which cholera was transmitted to Italy is a strong illustration of the criminal recklessness with which quarantine regulations are oftentimes conducted. At the outbreak of the disease in France, Spezia was selected by the Italian government as a quarantine station, where all Italian fugitives were detained who had fled from the stricken French cities. Those who were unable to pay were brought back to their native land by government vessels, and were held on board of ship till the days of quarantine had expired. Many hundreds of those refugees were picked up along the French coast and brought home. After their days of quarantine were passed, they were allowed to go ashore and take their mattresses, bedding, and personal effects with them. It is reported that many of them sold their infected stuff to the highest bidder. Some of those fugitives escaped ashore during the night, and took their clothing and bedding with them, and wandered wherever they chose.

Genoa had the disease introduced by means of its drinking water. The water of the Nicolay Aqueduct, which is supplied by the river Scrivia, had undoubtedly been contaminated by choleraic discharges. Near the head of this aqueduct, at a village called Busalla, from 1,500 to 2,000 laborers were engaged in excavating a new railroad track. Cholera broke out among them, and before it was discovered by the authorities, fourteen of them had died. Inquiry disclosed the fact, that many of those laborers were fugitives from Marseilles, and that nearly all, both sick and well, had been washing their clothes in the river which supplies the aqueduct. This explained the singular circumstance that the early victims of cholera were found scattered all over the city, wherever the water was used. Another noteworthy fact is, that before this water supply was shut off, the fatality was enormous; 275 out of 300 cases died, and all of them had been drinking this water.

The methods of fumigation and disinfection that were adopted at railroad stations throughout France and Italy were also very inefficient, and even worse than useless, because those who had complied with the regulation fancied themselves secure, when, in fact, the protection amounted to nothing. On the arrival of trains at one of these stations, all baggage was surrendered and left for fumigation outside of the station for two hours. The passengers were then hurried into large rooms, in the corners of which earthen dishes were placed, in which the fumes of chlorine were generated. They were kept exposed to these fumes for a period of seven minutes, after which they were permitted to resume their journey. In the morning these fumes were strong, but grew less during the day, but at no time were they of sufficient strength to destroy the cholera-germ. Moreover, it is evident that in order to be effectual in destroying the contagion, the vapor of chlorine or sulphur should be brought to a degree of intensity that would prove destructive to human life.

The foregoing brief description of the careless manner in which quarantine regulations were administered, and the inadequate methods that were employed in the prevention of cholera in Europe, fully corroborates the statements hitherto made in reference to the inefficiency of quarantine; namely, that in the majority of instances where it was unsuccessful in intercepting the progress of the disease, the cause of such failure is traceable to carelessness or incompleteness in the administration of its measures. It is, therefore, obvious that its alleged inefficiency does not detract whatever from the scientific principles involved. Those who deprecate the principles of quarantine might, with equal propriety, denounce the practice of roofing houses because some roofs leak. If a roof leaks, there is some fault in its construction, or else in the material of which it is composed; so likewise with quarantine, if the disease passes through it there must be some defect in its organization, or some point in its line of defense is not microbe-proof.

We need not, however, limit our deductions to negative evidence in proof of the value of quarantine, as the history of epidemics in the past furnishes abundant illustrations of most positive results that have thereby been attained. During the epidemic in Marseilles and Toulon the most rigid and exacting quarantine was established at Lyons and Paris, on those railroads which communicated with the infected cities. All passengers, baggage, and freight, as well as cars, were fumigated and disinfected, and subjected to the strictest surveillance. The result was that the disease was not transmitted to either of those cities, although the sanitary and hygienic precautions were also rigidly enforced, and no fruits or vegetables from infected districts were admitted. Most all nations had imposed a quarantine upon vessels from the infected ports; but Ottoman ports absolutely refused entry to such vessels upon any and all conditions. In consequence of these stringent measures, Turkey escaped the disease that year, which was unusual in its history prior to the year 1883. It is a well-known fact that whenever cholera prevailed in Europe or Egypt it has always later appeared in Constantinople. The sanitary condition of that city was extremely bad in 1883, and yet the disease did not make its appearance, neither in that year nor thereafter, in spite of the fact that it traveled along the shores of the Mediterranean, and numbered thousands among its victims. A satisfactory explanation for this immunity can be derived from the following circumstances: The belief has always prevailed in Turkey that all plagues are scourges sent by the Almighty to punish human creatures. Therefore, it would be an offense against Providence to make any effort to prevent this punishment. They, of course, always kept up a show of quarantine in order to distract the attention of European nations; but in fact, the precautions that were taken were merely farcical. The present Sultan, however, entertains entirely different views from his predecessors. He believes that God sends storms, plagues, and earthquakes, but that he also sends all insects; hence, he reasons that if we exterminate the latter, why should we not do all in our power to ward off the former. Therefore, he established and maintained a strict quarantine, and placed his palace in telegraphic communication with the quarantine station, and, in every way, rendered the service as efficient as possible. He exacted the strictest compliance with all the rules and regulations, and punished severely those who violated the health laws.

Palermo was not stricken by cholera in 1884. It is quite apparent why she escaped, when the fact is known that shortly after the outbreak in France, the official order was issued that no vessels whatever should be allowed to enter ports in Sicily until cholera had fully subsided, and only special permission was granted to certain persons to return home from places in Italy not infected. These same rigorous measures were adopted at the time of the epidemics of 1865 and 1873, with the same satisfactory results. Whereas, in 1866, when cholera prevailed in Naples, the disease was brought to Palermo by insurrectionists, who broke the quarantine and entered the city, immediately after which the disease broke out and created havoc among the inhabitants.

It has been urged as an argument against quarantine that England, Belgium, Germany, Switzerland, and other Eastern countries, which had taken no special quarantine precautions, remained free from the disease, while Italy, with its sanitary cordons and all its extreme measures, was not able to ward it off. A brief glance at the situation, and the relations existing between these two countries, will show plainly why this was so. It must be remembered that at the time of the cholera epidemic in France over 300,000 Italian laborers were employed in the sourthern part of France, a short distance from the Italian frontier. Ten thousand of these laborers were at work on the fortifications of Toulon. When work was suspended on account of the epidemic, the Italian government was obliged to provide for its subjects, which they did by furnishing them free transportation to their homes. From the time quarantine was established on the Italian frontier up to August 10th of that year, over 30,000 persons passed through the quarantine stations; 20,000 at government expense. In the early period of the epidemic, persons were allowed to pass through quarantine with the clothing they had worn in the infected districts, and were subjected to fumigation only. There is no doubt but that the contagion was thus brought into Italy.

When we take a comprehensive view of the cholera question, and reflect upon the causes of its propagation, and the source of its origin, India stands forth prominently as a collossal nuisance among the nations of the earth, the toleration of which constitutes the most flagrant outrage upon the human race, that has ever existed since the beginning of the world. Nor can we overlook or refrain from commenting upon England's responsibility in maintaining this monstrous "germ-incubator," to the great detriment of all other nations, and the enormous destruction of human lives. India is now regarded as an integral part of the British Empire, and the home government controls the great channels of commerce through which cholera has usually been transmitted to Europe. She also furnishes the majority of the steamers which are annually engaged in transporting Mohammedan pilgrims to Mecca. It is therefore evident, that the position she occupies in the prevention of cholera epidemics, is one which imposes the gravest responsibility, and demands the adoption of the most stringent and exacting precautionary measures that can possibly be instituted. Instead, however, of establishing and aiding in the maintenance of efficient quarantine regulations, she has constantly shown an intolerant disposition toward any measures which placed the slightest restraint upon her commerce. Owing to the extent and importance of her commercial interests with India, she has in every way evaded and attempted to thwart the quarantine regulations, adopted by the International Sanitary Council. This has been done, not only through the action of her government, which protests against the necessary obstruction to its commerce which the observance of those rules entail, but also her medical literature strongly advocates the doctrine that cholera is not contagious, and denounces all repressive measures. We cannot fail to note the striking contrast between England and France, in regard to activity and efficiency in the administration of quarantine. France, owing to her geographical position and climatic condition, has had extensive experience in dealing with epidemics, and has largely profited thereby, so that her sanitarians have acquired great knowledge and forethought, in matters pertaining to the invasion of pestilential diseases; and it is said, that whatever provisions have been made against the invasion of cholera by the International Sanitary Council, have been almost exclusively suggested and formulated by French sanitarians.

The all important question, as to what the United States maritime quarantine system consists of, and whether it is entitled to our implicit confidence in the present perilous situation of our country, has recently been extensively discussed in our sanitary conventions, and largely commented upon by our most eminent writers. While the statements in regard to its efficiency are somewhat conflicting, and adverse opinions have been expressed even by the same person on different occasions, yet the great mass of testimony shows conclusively, that our quarantine defenses, outside of New Orleans, are totally inadequate, and in order to render them thoroughly protective, the entire system should be reorganized, and placed upon a more efficient basis. Their inefficiency is not attributable to the personnel of the service, who, in most instances, are thoroughly competent, and discharge their duties to the utmost of their ability, as far as inferior equipments, and appliances, and the limited means at their command enables them; but the fault lies with the system itself, which is controled by political and other damaging influences, and is often "hampered by a vicious financial policy." In view of these facts, it is highly probable, that owing to these vitiating influences, State quarantine is a failure, and can never be elevated to the high standard of efficiency, that is demanded by the advanced state of sanitary science. It is therefore strongly advocated by sanitarians generally, that our maratine quarantine should be placed under national control and supervision. Since contagious disease, introduced through one of our ports, is liable to extend to a number of States, or throughout the entire country, and thus become a national scourge, and as even States who escape the disease, cannot fail to suffer an incalculable pecuniary loss in their commercial relations, it would therefore be eminently right and proper, that the means of protection against such a national calamity should be furnished, provided for, and administered, by the general government. There certainly could be no reasonable objection to national quarantine, especially on the part of states which have maritime ports, and are compelled to bear the responsibility and expense, incident to a quarantine service, whereby the whole nation is protected. The question of state rights has heretofore created considerable acrimonious dispute, and while the matter may be definately settled politically, and the obligations of states to the general government and to one another, may be clearly defined, yet it can hardly be expected that a state would consider the interests of another when its own welfare is at stake. The medical profession and sanitarians of our country, should make a united effort to bring this matter to the attention of our present Congress. Our representatives in that body should be cognizant of the fact, that the grave responsibility is resting upon them, of protecting our nation against the invasion of an epidemic which may devastate a great portion of our country, and ruin its prosperity for years to come. They should not be unmindful of the fact that they are the guardians of the lives and health of their constituents as well as their political representatives; and while they are wrangling over the tariff laws and cudgeling their brains how to dispose of an overflowing treasury, they may be tolerating absolute "free trade" on cholera-germs, and the omission of adequate protection, may cost the lives of thousands of our citizens and millions of money. In the cholera epidemic of 1884 and '85, France, Spain and Italy lost 220,000 out of 600,000 attacked, and the financial loss exceeded twenty millions lbs. sterling. It may be confidently predicted, that the time is not far distant, when the responsibility of nations in communicating contagious diseases to others, will be fully recognized, and the sending forth of emigrants from an infected district to a friendly nation, will be considered as much an act of hostility as any other aggressive warlike demonstration. The rigorous measures which have been adopted by some of the European seaport cities, are certainly worthy of imitation, and would be perfectly justifiable. No vesse from infected cities should be allowed to enter our ports, and all communication should be suspended until the disease is positively known to have subsided. If, however, so strict a measure should be deemed unnecessary, at least rags, and all fabrics, and articles of merchandise, which are difficult of disinfection, should be absolutely excluded. It has always been difficult for me to conceive it possible, for the fumes of a disinfectant of the greatest density to penetrate rags, woolens and similar fabrics, to a sufficient degree as to destroy all disease-germs that may be contained therein, even if the packages are opened and the goods exposed for the usual length of time ; and I would venture the assertion, that those who believe in the sufficiency of this procedure, would hesitate to wear or possess goods which they knew to have been transported by an infected vessel. A cursory perusal of foreign reports, has led me to the conclusion that a decided improvement might be made in our consular system. For instance, I observe from the report of the American Consul at Marseilles, that the epidemic of cholera had raged in that city for a period of two weeks, and the death-rate had attained the highest number of 70 per day, before the department of State ordered him to employ a competent physician to examine vessels, which cleared that port for the United States. The criminal carelessness of such delayed official action, is apparent without comment Moreover, it would seem highly necessary, that a competent medical inspector should be permanently connected with every seaport consulate, who should be required to make a thorough inspection of every vessel bound for the United States, and this should be done with reference to all infectious diseases, whether an epidemic is prevailing or not. In order that the greatest zeal and fidelity to our country may be secured, those inspectors should be American citizens of recognized ability, as physicians and sanitarians.

MILLERSBURG, OHIO, Nov. 16, 1887.

REPORT ON ADULTERATION OF FOOD, DRINKS AND DRUGS.

BY

D. H. BECKWITH, M. D.,

Chairman of the Committee on Adulteration of
Food, Drinks and Drugs.

REPORT ON THE ADULTERATION OF FOOD, DRINKS AND DRUGS.

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It was my intention to continue the investigation begun last year relating to food, drinks and drugs, and to report at this meeting the results of special examinations into the condition of the drug supply in the State of Ohio; but as in the opinion of the Board, the appropriation to that body did not justify any expenditure in that direction, I have been curtailed in the performance of the special work assigned to me, and can present in this paper no new results from analyses. It is true that the State Commissioner of Foods, General S. H. Hurst, very considerately offered to conduct for me any analyses I desired to have made, but I did not deem it advisable to accept assistance from another department, however kindly intentioned, and thereby establish a precedent that might clog the wheels of future legislation in our behalf.

Even a cursory glance at the vast amount of literature on the subject of adulteration, which a more liberal policy on the part of many of our sister States has enabled other Boards of Healths to accumulate, will convince the most skeptical that the detection and punishment of misdemeanors under existing sanitary statutes has had a most salutary effect, while a more careful examination of the statistics embodied in their reports show that wonderful results have been achieved, results which everywhere have received the sanction of public opinion and the enconiums of public economists.

Let us glean a little from these statistics in support of the claim that prohibition, in this direction at least, does prohibit, and that a still more liberal policy in the matter of special appropriation for the carrying out of sanitary measures should be marked out by our legislators.

In Massachusetts two-fifth of the $10,000 annually appropriated for Board of Health purposes is expended in the enforcement of laws respecting the adulteration of food, drinks, etc. The reports of chemists employed by the Board to make analyses show that in 1883 of six hundred and ninety-five samples examined, three hundred and thirty-two, or nearly fifty per cent., were found impure; but in 1886, of fourteen hundred and forty-five samples analyzed, only five hundred and forty-one were found below the standard, a gain in three years of neaaly 20 per cent In the matter of

MILK ANALYSES

a remarkable improvement was noted for the same time. In 1883, of three hundred examinations made seventy-eight per cent. of the samples were found below the accepted standard of purity, while in 1886 two hundred and seventy-five samples, from the same districts, showed but twelve per cent. below the standard, a gain in three years, under the operation of the law, of sixty-six per cent.

In the same report it is shown that of twelve hundred and four samples of pharmaceutical preparations forty-four and six-tenths per cent. were below the standard fixed by statute, and only such drugs as were suspected were submitted to the test. The report for 1886 covers two hundred and thirteen pages, ninety-nine of which are devoted to milk and forty-one to food and drug analyses—a text-book for thinking people as replete with truths and logical deductions as the elements of Euclid. Certainly the good old Bay State is acting a parental part to her children, and her example should be followed by her sister States.

In the perusal of this work my attention was particularly drawn to the report of the examination of a "remedy," with which all who read the newspapers are familiar. I refer to that much-vaunted panacea "Kaskine." Let me quote the words of the report: "Certainly no fraud has been found equal to that cure-all Kaskine, a non-secret remedy, which has been manufactured and sold in New York city at the price of one dollar each, in small, flat green vials, containing about two-thirds of an ounce of a white granular powder, freely soluble in water, of a sweet taste and without odor. The label claims that Kaskine stands unequalled and unrivalled in the world of science as the only medicine that can destroy the germs that cause each particular disease, and restore perfect health. Yet upon analysis it proves to be simple granular sugar, and nothing more."

Curiosity led me to read the advertisement of this remarkable remedy. Among its many other good qualities was one that commends itself to every practitioner under whose eye this particular part of the Massachusetts report falls. It reads as follows: "Kaskine can be taken without any special medical advice." It might have added, in tea, coffee or cocktail—for sweetening purposes.

Entire substitutions, however, are not very common, although I found in this same report, a little further on, that nineteen out of twenty-one samples of "Taraxacun" proved to be nothing but chicory.

Massachusetts does not stand alone in her good work, nor was she the first to enact and enforce laws against adulteration. New York and New Jersey took the initiative step in promulgating a code of sanitary laws as suggested by the National Board of Health. The second annual report of the New York Board shows that the sum of $3,679.60 was expended in a single year for the service of expert chemists and the purchase of food and drug samples and standard works of reference. In 1883 the sum of $3,950.64, and in 1884 the sum of $3,353.02 was expended for like purposes.

Who shall attempt to measure the sum of these benefactions to the public or number the silent benedictions which have welled up from thankful hearts for health restored and precious lives saved? It is estimated that in that sea of iniquity, New York city, thousands of infants die yearly through inanition arising from the use of contaminated milk, whether drawn from bottle or breast; contaminations which are far more frequently the fruit of adulteration than of impure surroundings. The transmission of tuberculosis from animals to man is a well-attested fact, and the testimony of such eminent veterinaries as Professor Law, of Cornell University, and Dr. Lydtin of Carlsruhe, to the effect that fully 50 per cent. of milch cows in the vicinity of large cities are suffering from this dread disease, shows the necessity of keeping a constant watch, not only upon the milk supply, but upon the environing conditions which govern the production of this supply.

New Jersey expends $1,000 annually in the analysis of foods, drinks and drugs. The report says: "During the past year, to some extent, the law as to the adulteration of foods has been carried out, but to make a thorough system of protection it would require thousands of dollars."

I refer thus briefly to the three pioneer States who have sought to proscribe the practice of adulteration by systematic and regular expenditures of money, simply to show that the well-directed efforts of the Board officials in these States have been productive of the highest good even where the amount of money to prosecute inquiries has been very small.

It would be a work of supererogation in a paper of this kind to dwell upon the advantages resulting to the public generally from the extension of public works, such as roads, railroads, water-works, etc. And yet the absence of these improvements would take not one jot or tittle from the wellfare of a people to whom they were unknown; while in the matter of

FOOD SUPPLY,

unrestricted adulteration and contamination would sap the life blood of the sturdiest nation on earth in a few years. Yet, in the full light of these facts, money is expended with an astounding prodigality in the construction of public works while mere pittances are doled out reluctantly to investigate the purity of our food supplies. A thousand dollars a year for a whole State for the suppression of a crime which claims its victims by hundreds! Why, sir, New Jersey pays more than that sum to many of her policemen for the bodily discomfort of staying out nights. All civilized, yes, and some of the old barbaric nations, have found it necessary to enact laws designed to protect their subjects from the evils arising from the use of impure foods and drinks. In the Pentateuch Moses directs what should and should not be eaten by the chosen people of God. Rome, in her palmy days, when the valor, strength and endurance of her soldiers commanded the admiration of the world, found it necessary to enact laws to insure pure food and water for her citizens and troops that she might retain the foremost place among nations, which had been won through the merit of sturdy limb and clear brain. Her aqueducts, from fourteen to sixty miles in length, were zealously guarded, and the severest penalties were imposed for any attempt to pollute the water supply As early as 1203 A. D., England, by royal proclamation, forbade the adulteration of bread, and in 1207 enacted a statute prohibiting bakers, brewers, and vintners from adulterating any of their products. From 1272 to 1307 Edward I imposed severe penalties upon the crime of sophistication, among which was the public exhibition of the offender in his shop window, followed by the pillory for a second offense, and for the third infraction of the law the complete demolition of the culprit's establishment. Germany and France years ago awoke to the necessity of adopting measures to put down the traffic in sophisticated wares, and for the past decade have waged an unrelenting war against this public sin. In Germany, for the year 1878 alone, 3,352 salesmen were convicted, and most beneficial results have followed. In our own country, laws have also been enacted by the various States, bearing upon this subject, imposing fines of from $10 to $1,000, and imprisonment for various terms. These laws were undoubtedly placed upon the statute books with the best of intentions, but the parsimony of most of the States has made their enforcement almost impossible by withholding appropriations or by directing them into channels where they are least needed.

An investigation, conducted under a law of Congress passed in 1848, showed that during the ensuing nine years nine hundred thousand pounds of drugs were condemned and confiscated at the port of New York alone. But this startling result seems to have satisfied the curiosity of the movers in the investigation, and since that time the laws have been comparatively inoperative.

Seventy years ago Mr. Frederick Accum, a chemist of celebrity, said that the adulteration of drugs was managed with all the order and skill of a regular and legitimate trade; and if that was true at that time it is but reasonable to presume that sophistications are carried on to a far greater extent to-day, as chemistry and the kindred sciences have made rapid strides of development, opening new fields of research and greater possibilities of concealment. In fact, so cunningly are many of the spice and drug adulterations conceived and carried out that only the most expert chemists are able to detect the presence of foreign ingredients.

The market of all commodities is governed by the one law of supply and demand, as immutable as the laws of the Medes and Persians. If the demand is governed by the price rather than by the quality, the supply will naturally accommodate itself to the demand, and the consumer ignorantly buys an inferior article or a sophisticated one, instead of one of standard quality, as he thinks he is doing. In this demand for cheap products lies the motive for adulteration. But the consumer does not recognize this fact, and his co-operation in ridding the country of this pernicious practice can only be secured by educating him up to a full knowledge of importing and producing cost, or by throwing a mantle of protection about him by compelling the producer to divulge the secrets of his trade, of which latter I will speak later on.

Nearly all dealers in drugs to-day are men ably qualified in pharmacy, who have had more or less experience in wholesale and retail houses, and well know the deleterious effects of adulterated drugs; but druggists follow the business because there is money in it, and the less scrupulous they are the more profit they find in it. To such, the knowledge they have gained is turned to account in filling shelves and drawers with stock that will yield the most profit. A thoroughly conscientious druggist passes through a trying ordeal for a few years, but generally he succumbs at last, and throws either his physics or his scruples to the dogs. A little elasticity of conscience suffices to render a wrong choice easy, and once in the mad whirl of money-getting there seems to be no limit to their greedy ambition. This is true, in some degree, of all classes of tradesmen. Manufacturers vie with each other in supplying wholesale dealers with goods to meet the demands of retailers, whose cupidity has been whetted by sharp competition.

Smuggling is a crime which occupies a very prominent place in criminal legislation, but this practice does not originate in any inherent depravity in man. Adulteration, however, is regarded more as a misdemeanor than a crime. But the smuggler seeks only to import a commodity which has a high value in use, while the sophisticator places upon the market commodities which are spurious, pernicious, and, in many instances, poisonous, and in all cases destitute of the value which they bear upon their faces. The former offers us brandies and wines of standard quality and unexceptional purity; the latter puts in competition a substitute which is a base counterfeit. Many laboratories are to-day preparing for the market so-called spiritous and vinous liquors which do not contain any of the elements which enter into the composition of the genuine articles, except a certain percentage of alcohol; and I recall an article manufactured by a St. Louis drug house, under the name of "Lemon Ginger," in which there was no trace of spirits, and yet in appearance and taste it was a fair counterfeit of Bourbon whiskey, with its intoxicating effects. No formula is given on the bottle, but it is openly sold in prohibition towns, in the West and Southwest, in immense quantities. These facts are vouched for by a friend, a civil engineer, who was obliged to exclude this intoxicant from his camps while constructing a railroad in Arkansas, on account of its deleterious effects upon his men. Recipes in book-form, for the manufacture of spurious liquors, and for the adulteration and "aging" of genuine liquors, are on sale in nearly all large cities; not openly, it is true, but by means of agents.

Prof. Falbergs' discovery of saccharine, a component of coal tar, will prove of inestimable value to dishonest sugar refiners. It is a white, soluble powder, two hundred and thirty times sweeter than sugar. What other properties it possesses is as yet, I believe, unknown, but whatever they may be short of virulent poison, the article will undoubtedly appear in the market, provided it can be produced cheaply enough, as the *vis vitae* of some inert substance masquerading as cane sugar. Example upon example might be cited in support of the claim that adulteration exists in some form in every city, village, and hamlet of the land. Aye! and in the country, too; for the honest and unsophisticated old farmer has tuned his lyre to the popular chord, and in dulcet tones lulls our suspicions to rest by his supposed simplicity and ignorance of metropolitan deceit.

The production and distribution of that large class of adulterants which the producer claims to be harmless, demands the special attention of legislative bodies. The word value has been so often misused by him in referring to his wares, that it is high time that a proper standard of purity be adopted by our law makers, and so formulated as to no longer admit of the deception of the consumer. There can be no doubt, that the confounding of these two terms, value and utility, so far as food and drug products are concerned, has been one of the principal causes of the failure of sanitary enactments to meet the end for which they were intended. Glucose, for example, is a commodity which has its own legitimate value, but its utility as a means of satisfying the normal craving for sugar must be rejected. Moreover the very fact that it reaches the consumer in disguise, not only gives it fictitious value, but acknowledges that its utility or "value in use," is below that of the article whose name it bears, and it becomes in such cases a cheat and a fraud.

Many other examples might be instanced, notably among drugs and medicines, where "commercial value" and "value in use," are quite different and entirely opposite qualities. The commercial value of many so-called drugs, has been established by brisk competition in that trade, at figures far below the cost of the crude material, and unless the practioner fortifies himself with a knowledge of the secrets of this particular branch of "industry," and knows to what extent his remedies are sophisticated, he cannot but fail to reach results which his knowledge of materia medica would lead him to reasonably hope for, even though the adulterations are perfectly harmless in themselves. Expert testimony from every state in the Union, will bear me out in the statement, that medical practitioners cannot depend upon the purity of any drug which they prescribe. Here is a danger to the general public, far greater than that arising from the infrequent use of alum in bread or poisonous bleaching agents in sugar, or even the common use of inert substitutes, which, while they go forth in masquerade, do not *kill* as prescriptions compounded with adulterated drugs so often do. I never read that legend "Prescriptions Carefully Compounded," and catch a glimpse of the snug hypocrite behind the scales, without recalling to mind that quotation from Macauley: "He was made miserable by the conflict between his taste and his scruples."

A report based upon analyses of "carefully compounded' prescriptions," would form very interesting reading for the medical profession, and indeed, the general public.

One great reason why sanitary regulations have fallen short of the mark, is the difficulty of bringing about conviction. No vigilance on the part of officers, and no severity of threatened punishment, can prevent the traffic in sophisticated wares, so long as the inherent love of gain dwells in man, and so many possibilities of escape from the penalties of the law lie open to offenders, through the technicalities and chicanery of our legal methods. The true way, I believe, to put down this evil, is to brand it with the mark of its own sin. *Let the law require that every package exposed for sale, bear the formula of its contents in language within the comprehension of the general public.* This, with the co-operation of purchasers in rejecting adulterated goods, would soon render the trade in them unprofitable, and thus materially diminish, if not completely discourage the entire traffic. Boards of health would be relieved of detective duty, and manufacturers of the disagreeable system of espionage to which they are now subjected under the workings of the law Expert testimony would then be sufficient to convict those who failed to comply with the law, as guilty of uttering false articles, or obtaining money under false pretenses, a crime which meets with summary and severe punishment everywhere. There would then be no room for legal quibbling, but the proven fact that the package examined was improperly labelled, would carry conviction with it. By such a law, the consumer would be fully protected against deception, and his better judgment would demand the genuine article even at an increased cost. Imagine the lover of raspberry jam, for instance, examining the formula which would of necessity appear on each and every package of that toothsome edible coming from a large manufacturing and canning establishment near Boston. This would be as follows:

Boiled tomatoes, strained	Ad. lib.
Glucose	Equal quantity.
Hayseed	Q. S.
Raspberry syrup to flavor.	

This is a receipe in actual use at the present time in a Boston establishment. Picture if you can the feelings of the moderate drinker as he glares at the skull and cross-bones, which, in conformity to the law would, of necessity, adorn the formula on the bottle from which he is about to take his morning dram, indicating the presence of corrosive sublimate or arsenious acid. A few instances such as these in every township in the United States, would speedily bring about a complete revolution in the traffic in adulterations.

The system of prevention here presented is intended only to defend the consumer against deception. It is not designed to abridge in any way the liberty of the manufacturer in offering his sophistications to the public, but simply to compel him to so brand his wares that "he who runs may read." Such a system, wisely devised and brought into active operation, could not fail to bring about gratifying results to both producer and consumer, to the one an incentive to honest dealing, and to the other a willingness to pay a little more for a genuine article. Its legitimate scope is to preserve to all classes of people an unlimited choice of foods, drinks, and drugs fitted to their economic condition; and those conditions are best fulfilled through the fullest enjoyment of that greatest of human blessings, good health.

I ask no one to accept my statements gratuitously. Let every one study the subject for himself, and he will find, in the vast array of facts, which are public property, that the enemy has sown tares in our fields while we slept. Let us arouse ourselves from our lethargy, and ask from our law-makers something more than fair promises of reform, or attempts at reform, which have been productive of so few beneficial results. Let us solicit our legislators to lay bare this insatiable and insidious enemy of domestic happiness by tearing aside its disguise, and by formulating laws which will reveal it in its true character.

EFFECTS OF OCCUPATION ON THE HEALTH OF INDIVIDUALS.

BY

JOHN D. JONES, M. D.,

President of the State Board of Health, and Chairman of Committee on Hygiene of Occupations and Railway Sanitation.

EFFECT OF OCCUPATION ON THE HEALTH OF INDIVIDUALS.

BY JOHN D. JONES, M. D., *President.**

GENTLEMEN: The study of the effect of various occupations on the health of individuals therein employed, offers an extensive field for investigation. Much good has been accomplished, and much more can be gained by inquiry in regard to the means of discovering the sources of injury and disease arising from some employments.

It is the duty of health boards to instruct the general public in regard to the means of preventing disease and injury to individuals. Manufacturers are almost always willing to accept and use any well-proven appliance or remedy that tends to reduce the dangers arising from their various industries. Much time and thought have been given, both in foreign countries and our own, to these subjects, as restrictive and preventive medicines are recognized as the proper lines of attack and defense against disease.

It is satisfactory to see that our people are cosmopolitan enough to receive and carry out good ideas and suggestions from other nations.

Our country being an agricultural one, the farming industry is of the greatest importance. The exposure necessitated by this mode of life, leads to many pulmonary troubles, and troubles brought about by too little time being given for digestion; but on the whole, the people living this kind of life are healthy, on account, no doubt, of the pure air and plain food. The troubles, such as typhoid fever, diphtheria, etc., arising from poor sanitation are not due to the occupation, but to the general surroundings, and the want of knowledge in regard to sanitary matters. Much could be done in the way of preventing disease among our farming people, if instructions could be given in regard to a proper mode of life, as having pure air, pure water, good food, and plenty of sunshine, the foundation is ready for a strong structure.

The class of occupations that necessitate a great amount of out-door exposure is large, and among the list might be placed those of commercial travelers, railroad men, salesmen, laborers, gardeners, miners, drovers, etc. All of this class run great risk on account of exposure and irregular modes of life, which can only, to a great extent, be regulated by the individuals themselves.

WORKERS IN LEAD.

This brings us to a class that offers great interest in the way of investigation in regard to the exposure to the bad effects of lead, and the various means used to prevent trouble.

* Elected June 16, 1887.

Under this class of workers may be placed: White lead workers, painters, plumbers, earthen ware workers, lead miners, file cutters, dye workers, glass makers, gas fitters, and printers.

WHITE LEAD WORKERS.

The improvements that have been made for the purpose of protecting the employes in white lead works from the dangers of "lead poisoning" are many. Not many years back little was done; but now, starting from the "smelting pot," improvements may be seen everywhere.

The fumes arising from the molten lead is a source of the greatest danger. To obviate this, a large iron hood is placed over the smelting pot, the hood being connected, by means of a pipe, with the smoke-stack, by which means the dangerous gases are carried away from the works. The "dust receiver" is another great improvement. All the various machines are to be inclosed in iron casings, which have vents leading into a large dust-receiver. These vents, by means of properly arranged draughts, carry all the lead dust to a large receiver placed in one part of the building. This, one can well understand, prevents much danger arising from the inhalation of the dust. The casings must be made of iron, as even with double wooden cases, it is impossible to make the receiver dust-proof, for the constant jarring of the machinery will loosen the joints. This is insisted upon by the law of England.

THE BARREL FILLER.

Before the use of this improvement all of the loose white lead was put into barrels by means of manual labor, which, of course, exposed the individuals to the dangers caused by the clouds of dust which necessarily arose during the packing. Now the barrel is filled direct from the bin.

Respirators are used where the loose white lead is handled. In this employment hygienic knowledge comes forward with much force as a preventive of trouble. It teaches that cleanliness is absolutely necessary for the well-being of the employes. It is most difficult to force people to be clean, and as they become accustomed to the work they seem to lose fear; therefore much unnecessary danger is brought about. A man who will wash himself carefully, brush his clothes, clean carefully his nails, if possible wear a beard and moustache, which must be cleaned before eating or drinking, also remembering to keep the bowels open, can, with almost impunity, work in white lead works.

Mr Frederick Eckstein, of Cincinnati, tells me that he insists upon his employes changing their occupation from time to time, which seems to be of much service to the men.

FILE CUTTERS.

The mortality among this class of workers is very great, which is, no doubt, brought about by the double exposure arising from the inhalation of the particles of lead and the danger of lead poisoning. In the manufacture of files a soft cushion of lead must be used for placing the finished side of the file upon, so that it will not be injured. This cushion is the principal source of the trouble. The rule of cleanliness can be applied to all of the employments where men are exposed to lead troubles.

The diseases arising from these callings are, lead poisoning, pulmonary troubles, urinary troubles, gout, diseases of the nervous system, and diseases of the organs of circulation. These might be said to be the principal dangers.

SAW-MAKERS AND TOOL-MAKERS.

Persons working in this class of employment are exposed to the dangers produced by the inhalation of particles of metal, which causes, to a marked degree, respiratory troubles. These can be diminished by means of cleanliness, arrangement of proper draughts of air, and by wearing respirators.

WORKERS IN WOOL AND COTTON.

Individuals following these callings are exposed to the danger arising from the inhalation of the nap and filaments that are released by the handling of the materials used. The danger can be lessened by means of properly arranged draughts of air, which will carry the particles and dust from the employes. I would advise the use of the "respirator" by the workers in these employments. It is almost impossible to accustom employes to these disfiguring appliances. The workers in the drying department and those handling the dyed goods run risks on account of the dye stuff used, such as arsenic, analine, coraline, picric acid, copperas, etc. Here cleanliness and proper hygienic information are again the best preventives; and it should be the duty of all manufacturers to see that the proper instructions are given. Much trouble arises in these callings from bad ventilation, changes from hot to cold, and from dampness produced by the steam. It is impossible to do away entirely with the dangers to which these employes are exposed.

EMPLOYES IN GAS-WORKS.

The various improvements in the different departments of gas-works have very much reduced the mortality among the people employed. All means that relieve the waste of the workman's strength and tissue are of great use to the world. One of the most dangerous positions was that of stoker, where everything was done by hand, so to speak; now the steam stoker employed saves the men from much exposure. General Hickenlooper, of the Cincinnati Gas Company, states that the coal is never touched by hand from the time it leaves the yard until its coke is placed before the customer's door. This shows that a great amount of labor saving has been accomplished, thereby preventing much unnecessary exposure for those employed. Respiratory troubles and rheumatism seem to be the principal ailments that arise from this industry.

These, no doubt, are caused by the unavoidable changes of temperature and the great amount of dust that is about the works.

FRESH AIR AND LIGHT.

Investigation shows the great difference in the mortality between those whose calling necessitates an out-door life and those who are necessarily confined indoors. Much damage is brought about by vitiated air, and the damage is not confined to any one set of organs; all seem to be affected, but, of course, the organs of respiration are mostly endangered. Much trouble also arises from the bad lighting of factories and workshops. A little common sense and proper hygienic instruction would save many lives and make stronger men and women. Everything should be done to improve the ventilating and lighting of factories and workshops, also to endeavor to arrange so that draughts of air should come from certain quarters, thereby carrying the dust and particles away from the employes towards dust collectors. By the adoption of these means many risks caused by the inhalation of injurious materials may be avoided.

EMPLOYMENT OF WOMEN.

One frequently sees women forced to work at callings for which they are illy suited. Much has already been done to ameliorate the condition of working women, but much more can be accomplished.

A more brutal order cannot be conceived than that of forcing a poor, timid, weak girl to stand constantly, and all for the sake of appearances. This is certainly not common sense nor humanity.

These wrongs have been greatly overcome by constant appeals to the employers, and the majority of shop-keepers permit their employes to sit down when they are unoccupied. One can understand the many uterine troubles that may and do arise from the constant standing, besides the unnecessary waste of strength.

On the coast of Normandy women are employed to load vessels with flint-bowlders, which are used for the manufacture of stoneware china. These pebbles are carried in baskets fastened on the backs of the women. The result is that all, with very few exceptions, among the women thus employed have more or less serious uterine troubles, and many are entirely unfitted for child-bearing. A law should be made preventing the employment of women in callings that require heavy lifting or carrying heavy loads. Germany has taken a decided step forward in regard to endeavoring to have proper legislation to prevent the employment of women in laborious callings. This certainly should be followed by all civilized nations, for if any should be protected it certainly should be the women, from whom so much is expected. While on the subject of legislation in regard to health of employes, it might be suggested that some action should be taken concerning the use of poisons in the manufacture of various articles of commerce. The employe is not alone exposed, but also the health of the public at large. The German Government has taken effective means to prevent this great source of danger. It would be well if the General Assembly would take some action with reference to this matter, as much trouble could be averted and many causes of disease prevented.

From observations made by Dr. Wm. Ogle, of London, England, the following table shows the mean annual death-rate of males in various occupations:

ANNUAL DEATH RATE PER 1,000.

Profession, trade or industry.	Males 20 years of age and upwards.	Males 25 to 65 years of age.
All occupations	22.83	15.42
Medical profession	25.53	17.30
Clerical	15.93	8.57
Legal	20.23	12.97
School-master	19.90	11.09
Clerk, commercial and law	21.10	15.61
Commercial traveler	20.06	14.61
Farmer	17.94	9.73
Agricultural laborer	18.28	10.80
Gardener	15.08	9.24
Inn-keeper	29.02	23.47
Brewer	29.23	20.99
Chemist	22.52	15.66
Shop-keeper	19.43	13.52
Butcher	25.89	18.05
Baker	21.87	14.77
Tailor	22.45	16.21
Shoemaker	20.66	14.20
Printer	23.75	14.36
Watch, clock, philosophical instrument maker and jeweler	21.20	14.36
Book-binder	25.36	18.00
Earthenware manufacturer	35.98	26.83
Cotton manufacturer	27.19	16.76
Woolen and worsted manufacturer	26.47	15.91
Mason, bricklayer and builder	22.29	14.94
Carpenters and joiners	19.30	12.64
Painter, plasterer and glazier	25.95	18.53
Cutler	28.52	20.18
Blacksmith	23.14	14.99
Quarrymen	26.42	17.29
Coal men	23.97	15.72

By looking over the above table, one can see among the professions that the medical profession leads the list. So, notwithstanding, the popular idea that the doctor escapes all "ills that flesh is heir to," goes for little. Among the most prominent troubles that medical men seem to suffer from, are those of the respiratory organs, heart disease and troubles of the circulating system, apoplexy and paralysis. Nor are they spared the other "ills." To say that much could be done to lessen the risks would be true, but to say how, would only present a Utopia which can never be reached, as notwithstanding physical condition, wind or weather, the doctor must go when called.

These investigations, showing the various ways employes are exposed to disease resulting from the different callings, go to prove that the only correct way to overcome many troubles, is by giving the people proper information. A little thought, given in the right place, would do away with much suffering. A good idea would be, that lectures, or rather familiar talks on the subject of personal hygiene, be given employers and employes: without doubt some seeds would fall on good ground.

Owing to the immensity of the subject of the effect of occupations on the health of individuals, it has only been possible to deal with a very few classes, but it is a field that every health board should cultivate and study. They should also endeavor to work in unison with the gentlemen who have the inspection of manufactories and work-shops in their hands. In this way a great deal could be gained for the good of the working classes.

METEOROLOGICAL AND HEALTH CHARTS FOR OHIO.

FOR THE YEAR ENDING OCTOBER 31, 1887,

PREPARED BY

E. R. EGGLESTON., M. D.

EXPLANATION OF THE CHARTS.

In general, they represent the daily meteorological conditions for the stations Cleveland, Columbus and Cincinnati, and the prevalence of diseases from week to week, for the whole State, as far as reported. These stations are selected because the observations are made by experts, and are, therefore, reliable, and as more clearly representing the whole State, inasmuch as they mark distinctive sections of it. All meteorological data are taken from reports of the State Meteorological Bureau, and the standard data, of all sorts, are figured and written in the left-hand margin. Each series of curves is named opposite, on the left, as, "Thermometer," "Barometer," etc., that for "Humidity" being shown in a separate form. The broken line running through each series marks the *mean for all stations in the State.* Beginning with August there are given, in addition, daily extremes of temperature, represented by perpendicular lines; and monthly extremes of temperature and pressure at any station, with dates of occurrence, represented by oblique lines running across the curves.

The morbidity curves are taken from weekly reports of the State Board of Health. The figures in the column at the right of the chart, and the matter in the right margin refer to these curves. Each curve represents a group of diseases, as indicated in the margin.

ANALYSIS OF MARCH, 1887.

Meteorological

Humidity —First series of curves. Marked by considerable fluctuations and high percentage in first and third weeks. Mean for State, 77.2 per cent.

Temperature.—Second curves. No marked fluctuations, except in first and third weeks. Downward movement during the whole month. Mean for the State, 35°.8. Normal, 38°.2. Below normal, 2°.4.

Precipitation.—Considerable only in first week. Moderate fall in fourth week. Monthly mean for State, 2.23 inches.

Pressure.—Third curves. Falling barometer, except in first and fourth weeks, when in each there is sharp rise and fall. Mean for the State, 30.053 inches.

Wind —Prevailing N. W.

State of Weather.—More cloudy than fair, more fair than clear. Only two days clear over whole State.

Morbidity.

Zymotic.—Double continuous line. From first to tenth the number of cases rapidly increases from 270 to 496, with measles leading in number, followed by diphtheria. This appears at the period of greatest extremes of humidity, greatest precipitation, a cold wave, a sharp rise and fall of pressure, a good deal of easterly wind, and cloudy weather. During last half of month there is rapid decrease in number of cases, with drying air, mostly falling temperature, little rain, and rising barometer.

Acute Pulmonary.—Single continuous line. The course of this curve is very like the preceding, under similar conditions.

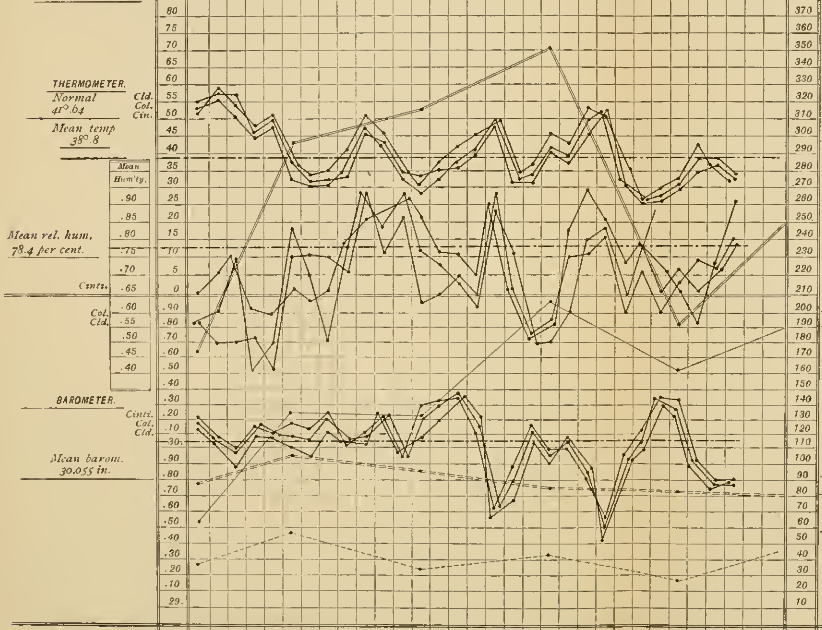
Malarial—Double broken line. *Catarrhal*—Single broken line. *Intestinal*—Dotted line. None of these present marked features, being but slightly prevalent.

The number of observers and counties reported, refer to reports of physicians to the State Board of Health.

As a matter of course no attempt is made, at present, to draw conclusions, or frame hypotheses. When, after a number of years of such graphic use of the actual facts, comparisons are made, then deductions may legitimately be drawn, but not before. For the present, then, let us be contend to gather the facts, leaving to time to prove their value.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—NOVEMBER, 1886.

DATE		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	16	19	20	21	22	23	24	25	26	27	28	29	30	31		No. Cases.
PRECIPITATION.	°F. 100																																	410
Max. at any Sta. in .00 of an inch.	95			1		56	148	49	70	23	31	8	102	92			64	200	349	—			152	157	13	20	2	1	6	60	3			400
	90			53			64	53	—	56	31	75	148	37	2		1	220	98				70	182		21	15	5		20	50			390
Mean. 4.23 in.	85			45			50			18	24	45	152	156			95	200	11			26	45	223	50	33	—	—		13	40			380



ZYMOTIC DISEASES.

Measles, Diphtheria, Scarlatina, Typhoid Fever, Erysipelas, Whooping Cough.

ACUTE PULMONARY DISEASES.

Bronchitis, Pneumonia, Pleurisy, Croup.

Diseases named in order of prevalence.

MALARIAL DISEASES.

DIARRHOEAL DISEASES.

Largest No. weekly observers - 77.
Least " " " - 41.
Largest No. counties reported - 48.
Least " " " - 40.

WIND Velocity Direction		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	16	19	20	21	22	23	24	25	26	27	28	29	30	31
	Cld.	S.	S.	S.W	S.	W	N.W	N.W	S.W	S.	S.W	N.W	N.E	N.W	S.W	S.W	S.W	S.E	S.W	W.	W	S.W	S.E	S.W	W	W	S.W	S.W	S.	N.	E.	
	Col.	S.W.	S.	S.W	S.W	W	W.	W	S.W	S.E	S.W	N	N.W	W	S.W	N.W	S.E	S.E	S.W	S.W	S.W	E.	E.	S.	S.W	W	S.W	S.	S.W	W.	N.	
	Cinti.	S.E	S.W	W.	S.	S.W	N.W	N W	S.W	S.E	W	N.E	N.E	W.	S.	E	S.E	S.	S.W	S.W	S.	N.E	S.E.	W.	W.	N.W	S.E	W.	S.W	W	N.W	

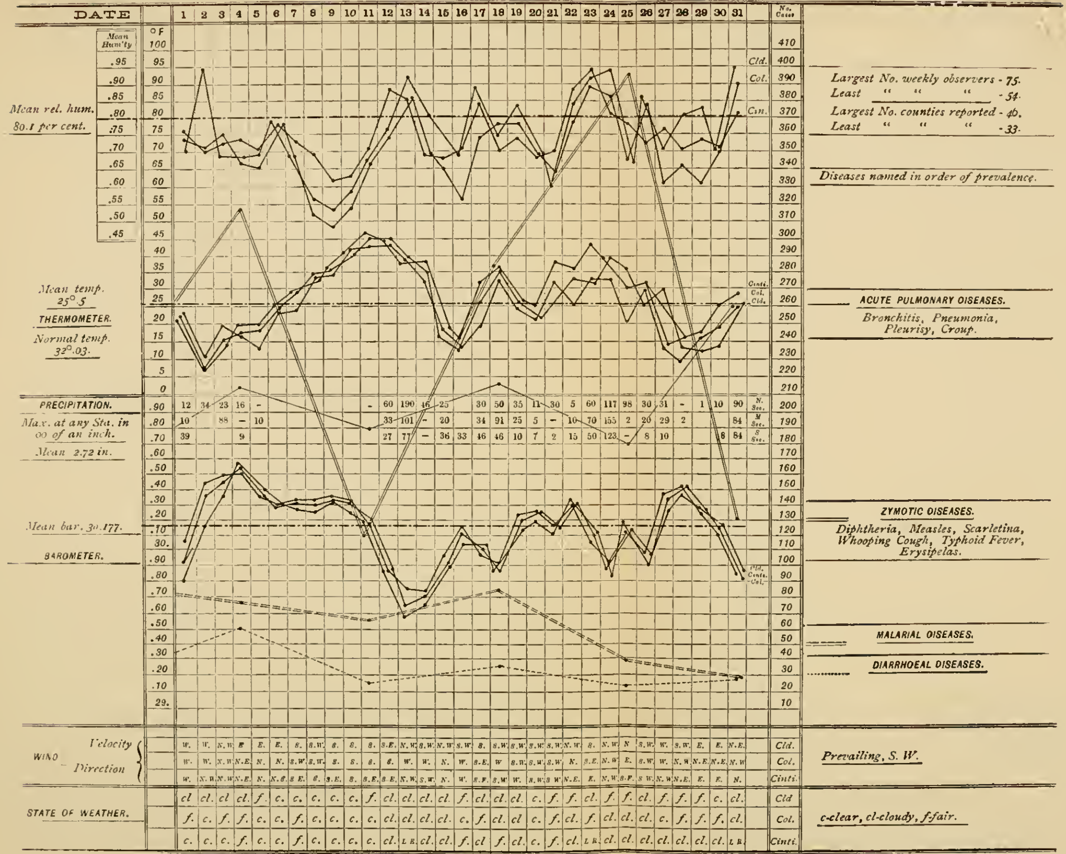
Prevailing, S. W.

STATE OF WEATHER.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	16	19	20	21	22	23	24	25	26	27	28	29	30	31
	Cld.	c.	f.	f.	f	f	cl	cl	f	cl.	cl	cl.	cl	cl.	c.	c.	f.	cl	cl.	f.	c.	c.	f.	f.	f.	cl	f.	f.	cl	cl	cl.	
	Col.	c.	cl	f.	c.	f	f	f	f.	cl.	cl	f.	cl	f.	c.	c.	f	cl	f.	c.	c.	f.	cl.	f.	c.	cl	f.	f.	cl.	cl.	cl.	
	Cinti.	c.	f.	f.	f.	f.	f.	f.	f.	cl	cl	cl.	cl.	f.	c.	c.	f.	cl	f.	c.	f.	cl	cl.	f.	c.	cl.	f.	f.	f.	cl	cl.	

c-clear, cl-cloudy, f-fair.

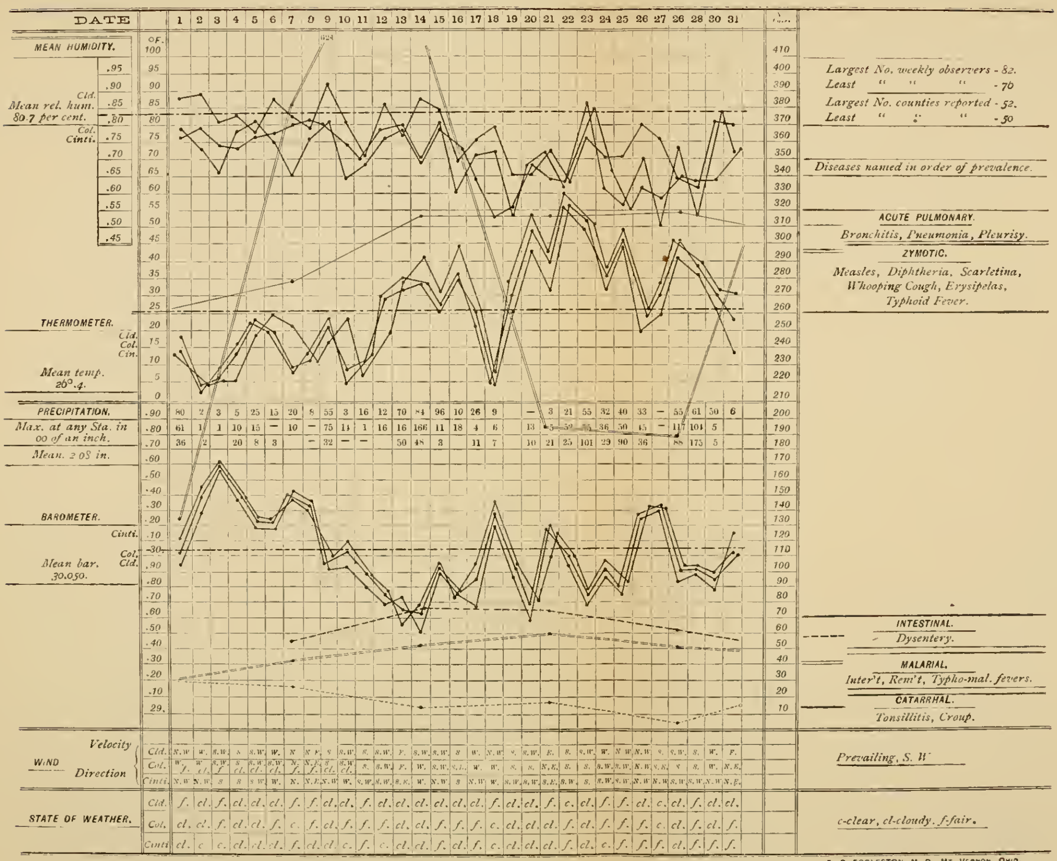
E. R. EGGLESTON M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—DECEMBER, 1886.



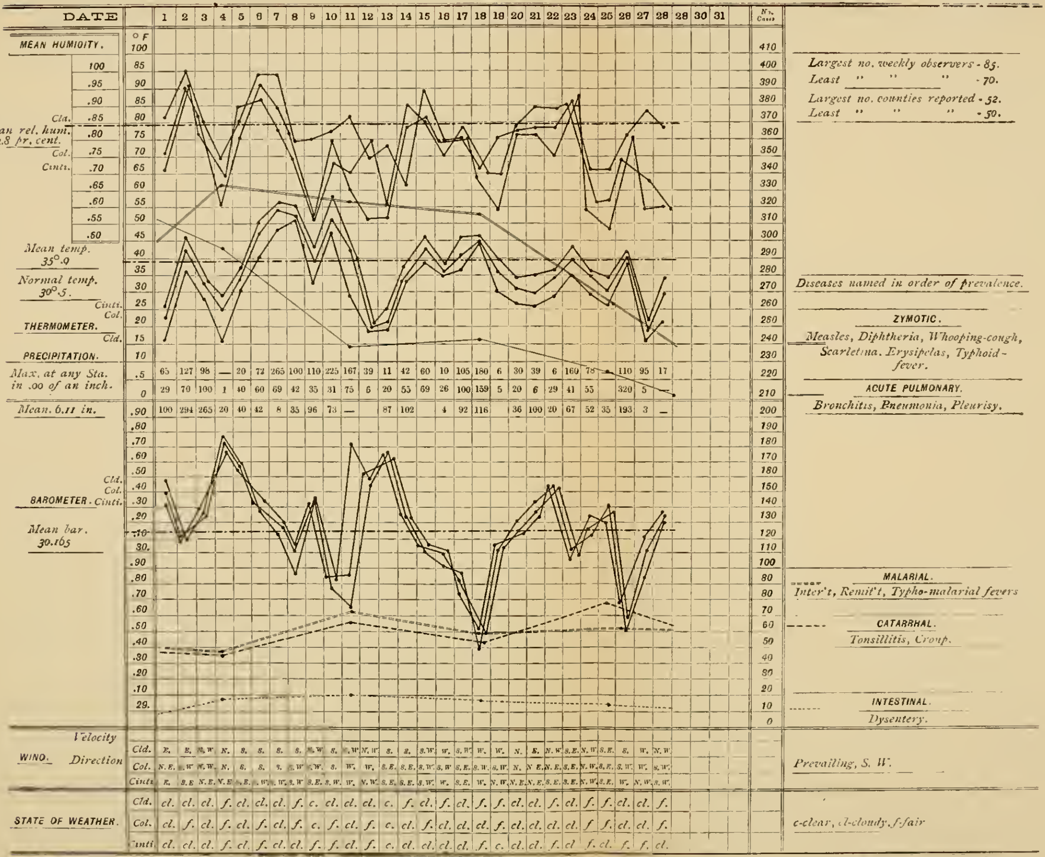
E. R. EGGLESTON, M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—JANUARY, 1887.



E. R. EGGLESTON, M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—FEBRUARY, 1887.



Largest no. weekly observers - 85.
Least " " " - 70.
Largest no. counties reported - 52.
Least " " " - 50.

Diseases named in order of prevalence.

ZYMOTIC.
Measles, Diphtheria, Whooping-cough, Scarletina. Erysipelas, Typhoid-fever.

ACUTE PULMONARY.
Bronchitis, Pneumonia, Pleurisy.

MALARIAL.
Inter't, Remit't, Typho-malarial fevers

CATARRHAL.
Tonsillitis, Croup.

INTESTINAL.
Dysentery.

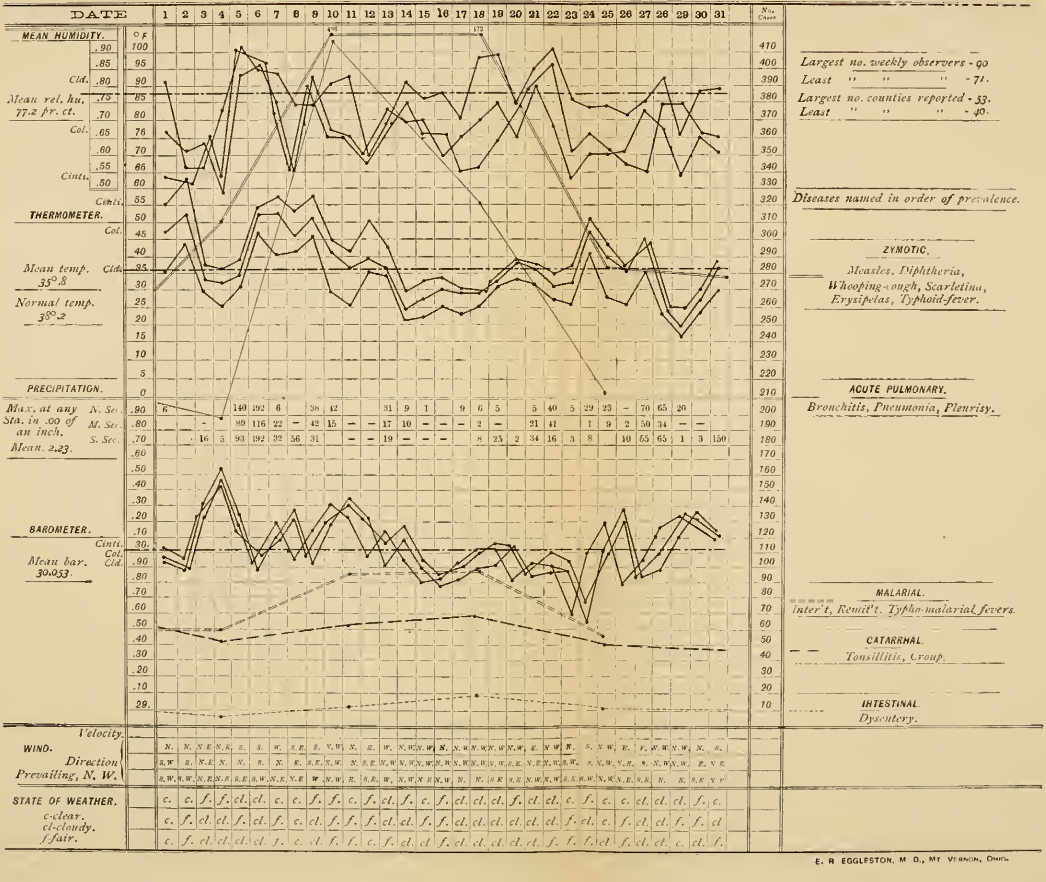
DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	28	30	31
PRECIPITATION. Max. at any Sta. in .00 of an inch.	65	127	98	—	20	72	265	100	110	225	167	39	11	42	60	10	105	180	6	30	39	6	160	78		110	95	17			
	29	70	100	1	40	60	69	42	35	31	75	6	20	55	69	26	100	159	5	20	6	29	41	55		320	5	—			
	100	294	265	20	40	42	8	35	96	73	—		87	102		4	92	116		36	100	20	67	52	35	193	3	—			
WIND. Direction Cld.	E.	E.	S.W.	N.	S.	S.	S.	S.	S.W.	S.	N.W.	N.W.	S.	S.	S.W.	W.	S.W.	W.	W.	N.	E.	N.W.	S.E.	N.W.	S.E.	S.	W.	N.W.			
Col.	N.E.	S.W.	N.W.	N.	S.	S.	S.	S.W.	N.W.	S.	W.	W.	S.E.	S.E.	S.W.	S.W.	S.E.	S.W.	S.W.	N.	N.E.	N.E.	S.E.	N.W.	S.E.	S.W.	W.	S.W.			
Cinti.	E.	S.E.	N.E.	N.E.	S.E.	S.W.	S.W.	S.W.	S.E.	S.W.	W.	N.W.	S.E.	S.E.	S.W.	W.	S.E.	W.	N.W.	N.E.	N.E.	S.E.	S.E.	N.W.	S.E.	W.	N.W.	S.W.			
STATE OF WEATHER. Cld.	cl.	cl.	cl.	f.	cl.	cl.	cl.	f.	c.	cl.	cl.	cl.	c.	f.	cl.	f.	cl.	f.	f.	cl.	cl.	f.	cl.	f.	f.	cl.	cl.	f.			
Col.	cl.	f.	cl.	f.	cl.	f.	cl.	f.	c.	f.	cl.	f.	c.	cl.	f.	cl.	cl.	cl.	f.	cl.	cl.	cl.	cl.	f	f.	cl.	cl.	f.			
Cinti.	cl.	cl.	cl.	f.	cl.	f.	cl.	cl.	f.	f.	cl.	f.	c.	cl.	cl.	cl.	cl.	f.	c.	cl.	cl.	f.	cl	f.	cl.	f.	f.	cl.			

Prevailing, S. W.

c-clear, cl-cloudy, f-fair

E. R. EGGLESTON M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—MARCH, 1887.



PRECIPITATION.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N. Sec.	6				140	192	6		38	42			31	9	1		9	6	5		5	40	5	29	23	–	70	65	20		
M. Sec.			–		89	116	22	–	42	15	–	–	17	10	–	–	–	2	–		21	41		1	9	2	50	34	–	–	
S. Sec.			16	5	93	192	32	56	31		–	–	19	–	–	–		8	25	2	34	16	3	8		10	65	65	1	3	150

WIND. Direction

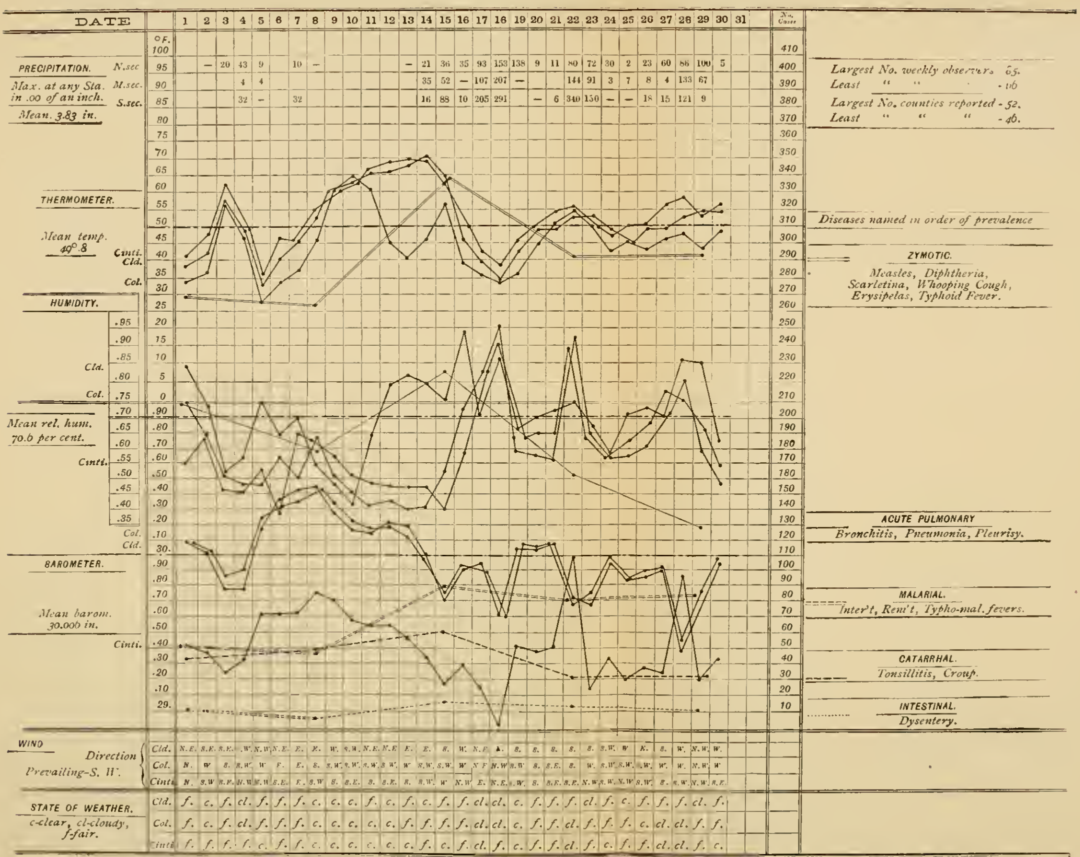
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N.	N.	N. E	N. E	S.	S.	W.	S. E.	S.	N. W.	N.	E.	W.	N. W.	N. W.	N.	N. W.	N. W.	N. W.	N. W.	E.	N. W.	N.	S.	N. W.	E.	F.	N. W.	N. W.	N.	E.
S. W	S.	N. E	N.	N.	S.	N.	E.	S. E.	N. W.	N.	S. E.	N. W	N. W	N. W	N. W	N. W	N. W	N. W	S. E.	N. E	N. W	S. W.	S.	N. W.	N. E.	[illegible]	N. W	N. W.	E.	N E
S. W.	S. W.	N. E.	N. E	S. E	S. W.	N. E.	N. E	W	N. W	E.	S. E.	W.	N. W	N E	N. W	N.	N.	S E	S. E	N. W.	N. W	S. E.	S. W.	N. W	N. E.	S. E.	N.	N.	S. E	N E

STATE OF WEATHER.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
c.	c.	f.	f.	cl.	cl.	c.	c.	f.	f.	c.	f.	cl.	f.	c.	f.	cl.	cl.	cl.	f.	cl.	cl.	c.	f.	c.	c.	cl.	cl.	cl.	f.	c.
c.	f.	cl.	cl.	f.	cl.	f.	c.	cl.	f.	f.	f.	cl.	cl.	f.	f.	cl.	cl.	cl.	cl.	cl.	cl.	f.	cl.	c.	f.	cl.	cl.	f.	f.	cl
c.	f.	cl.	cl.	cl.	cl.	f.	c.	cl.	f.	f.	c.	f.	cl.	cl	f.	cl.	cl.	cl.	cl.	cl.	f.	f.	f.	cl.	f.	cl.	cl.	c.	cl.	f.

E. R. EGGLESTON, M. D., MT VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—APRIL, 1887.



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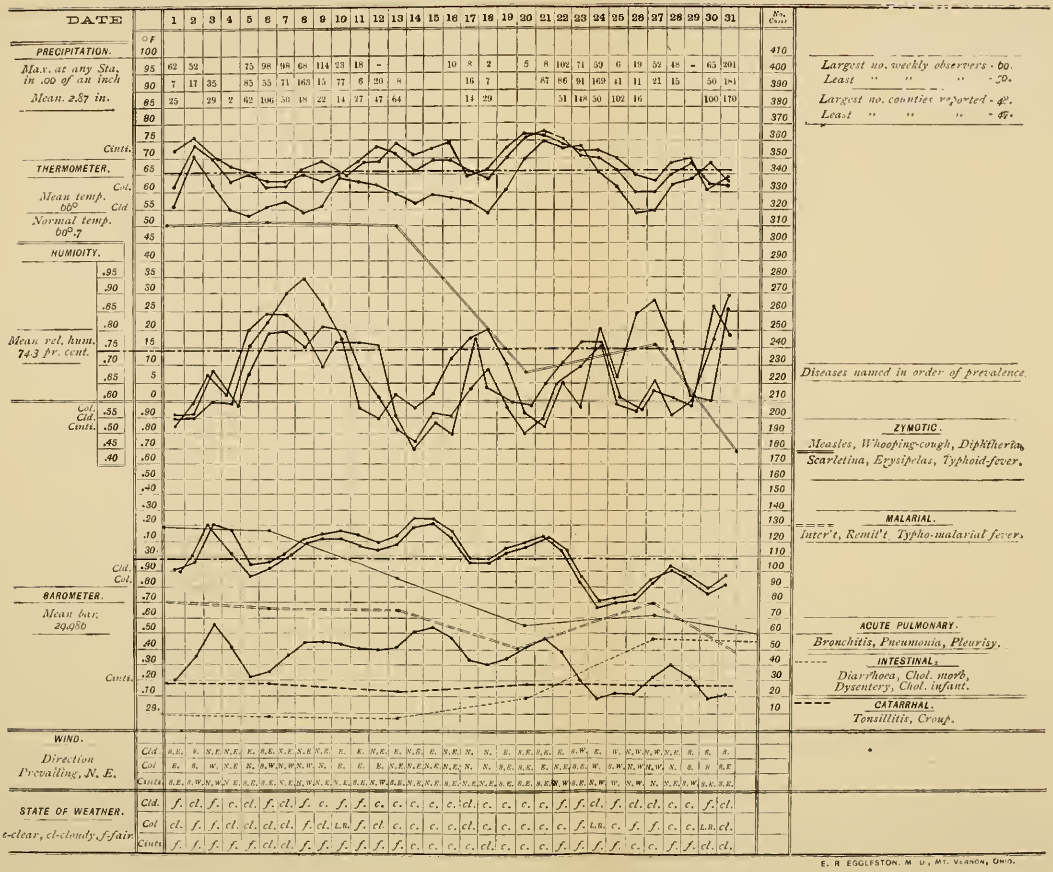
METEOROLOGICAL AND HEALTH CHART FOR OHIO.—MAY, 1887.



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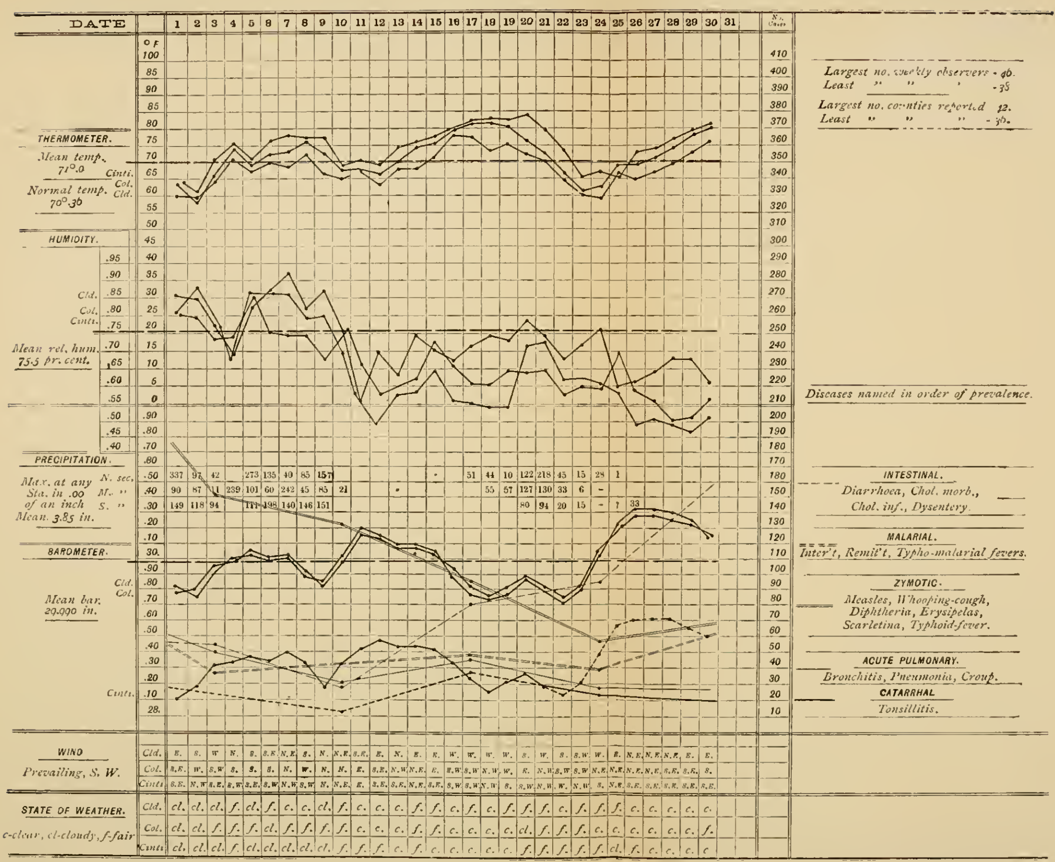
METEOROLOGICAL AND HEALTH CHART FOR OHIO.—JUNE, 1887.



PRECIPITATION.

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N. sec.	337	97	42		273	135	40	85	157						·		51	44	10	122	218	45	15	28	1						
M. "	90	87	11	239	101	60	242	45	85	21			·					55	57	127	130	33	6	-							
S. "	149	118	94		111	198	140	146	151											80	94	20	15	-	1	33					

WIND

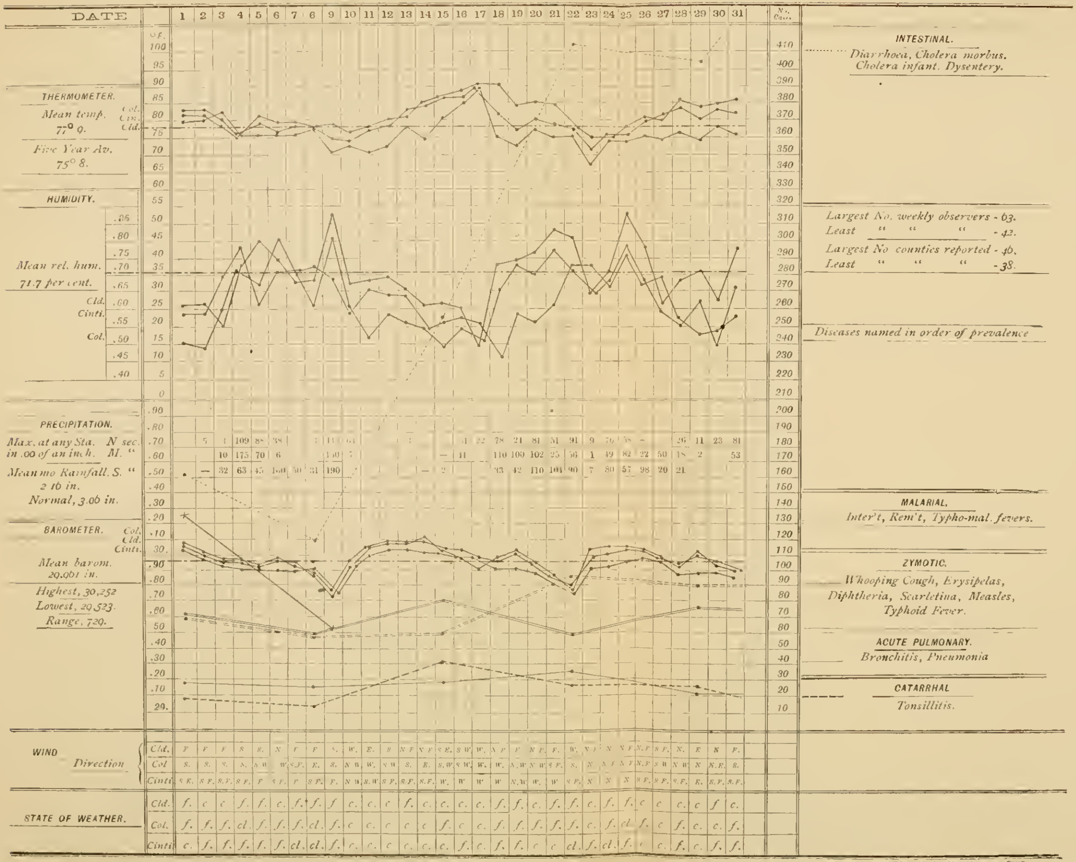
DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Cld.	E.	S.	W	N.	S.	S.E	N.E.	S.	N.	N.E.	S.E.	E.	N.	E.	E.	W.	W.	W.	W.	S.	W.	S.	S.W.	W.	S.	N.E.	N.E.	N.E.	E.	E.	
Col.	S.E.	W.	S.W	S.	S.	S.	N.	W.	N.	N.	E.	S.E.	N.W.	N.E.	E.	S.W	S.W	N.W.	W.	E.	N.W.	S.W	S.W	N.E.	N.E.	N.E.	N.E.	S.E.	S.E.	S.	
Cinti.	S.E.	N.W	S.E.	S.W	S.E.	S.W	N.W	S.W	N.	N.E.	E.	S.E.	S.E.	N.E.	S.E.	S.W	S.W	N.W	S.	S.W.	N.W.	W.	N.W.	S.	N.E.	S.E.	S.E.	S.E.	S.E.	S.E.	

STATE OF WEATHER.

DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Cld.	cl.	cl.	cl.	f.	cl.	f.	c.	c.	cl.	f.	c.	c.	c.	f.	f.	c.	f.	c.	f.	f.	f.	c.	f.	f.	f.	c.	c.	c.	c.	c.	
Col.	cl.	cl.	f.	f.	f.	cl.	f.	f.	f.	f.	c.	c.	c.	f.	f.	c.	c.	c.	c.	cl.	f.	f.	f.	c.	c.	c.	c.	c.	c.	f.	
Cinti.	cl.	cl.	cl.	f.	cl.	cl.	cl.	cl.	cl.	f.	f.	f.	c.	f.	c.	c.	c.	c.	c.	f.	f.	f.	f.	f.	cl.	f.	c.	c.	c.	c	

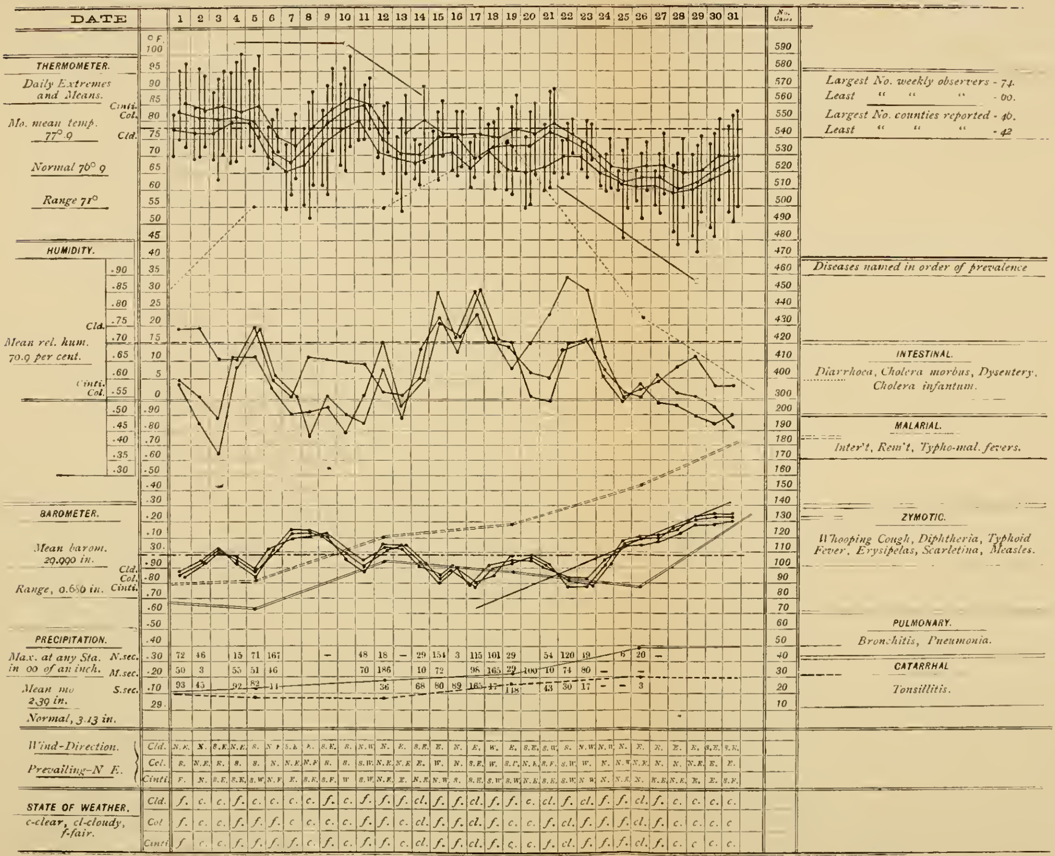
E. R. EGGLESTON, M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—JULY, 1887.



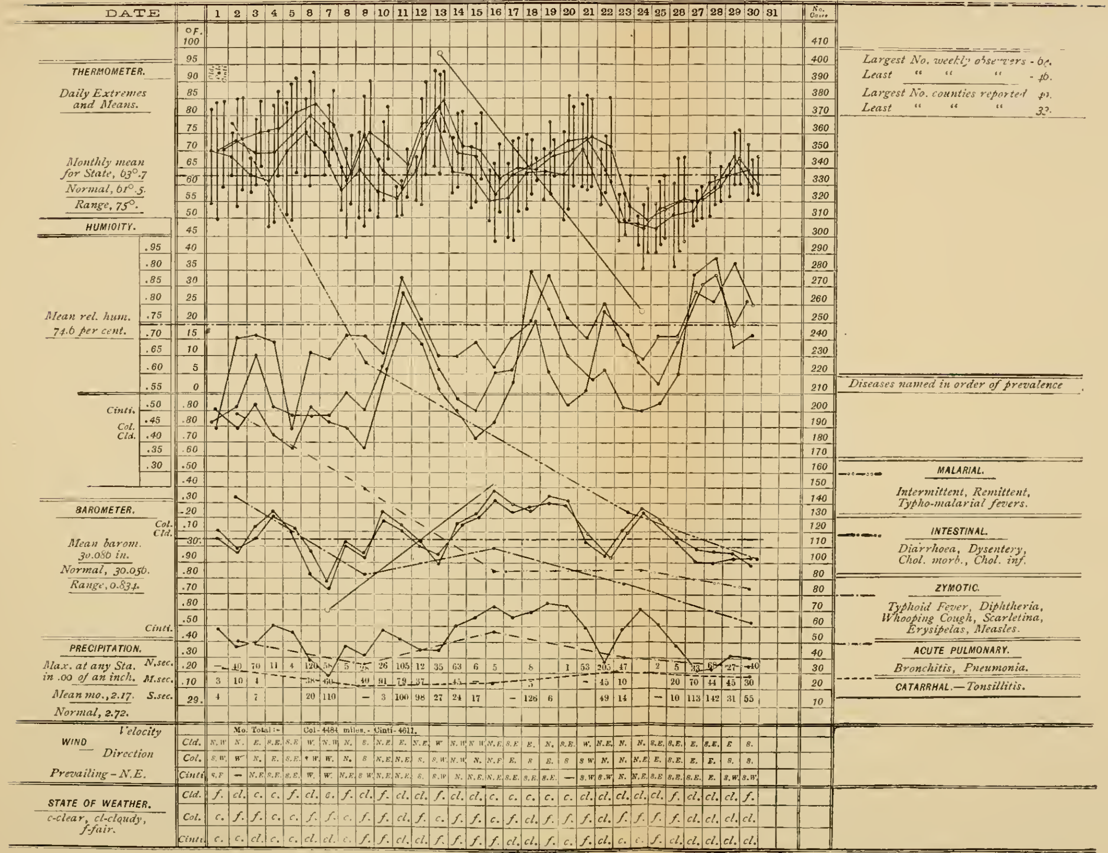
E. R. EGGLESTON, M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—AUGUST, 1887.



E. R. EGGLESTON M. D., MT. VERNON, OHIO.

METEOROLOGICAL AND HEALTH CHART FOR OHIO.—SEPTEMBER, 1887.



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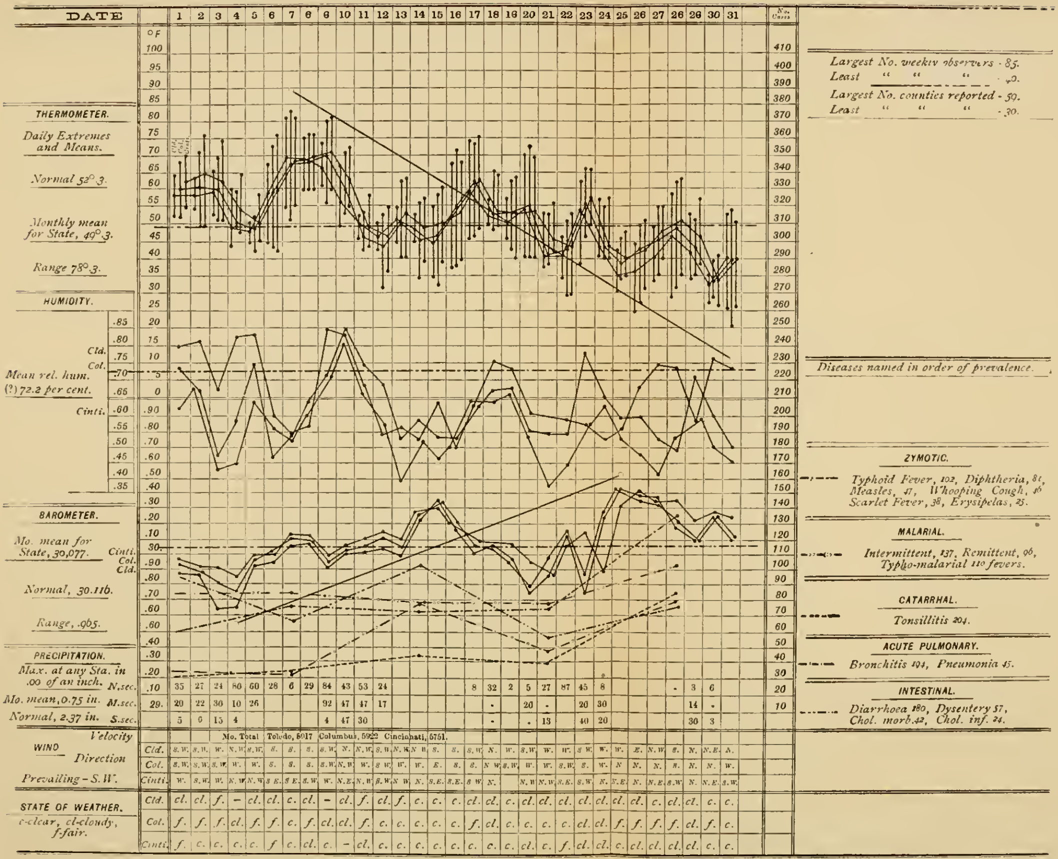
METEOROLOGICAL AND HEALTH CHART FOR OHIO.—OCTOBER, 1887.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N.sec.	35	27	24	80	60	28	6	29	84	43	53	24					8	32	2	5	27	87	45	8				.	3	6	
M.sec.	20	22	30	10	26				92	47	47	17						.		20	.		20	30					14	.	
S.sec.	5	0	15	4					4	47	30							.		.	13		40	20					30	3	

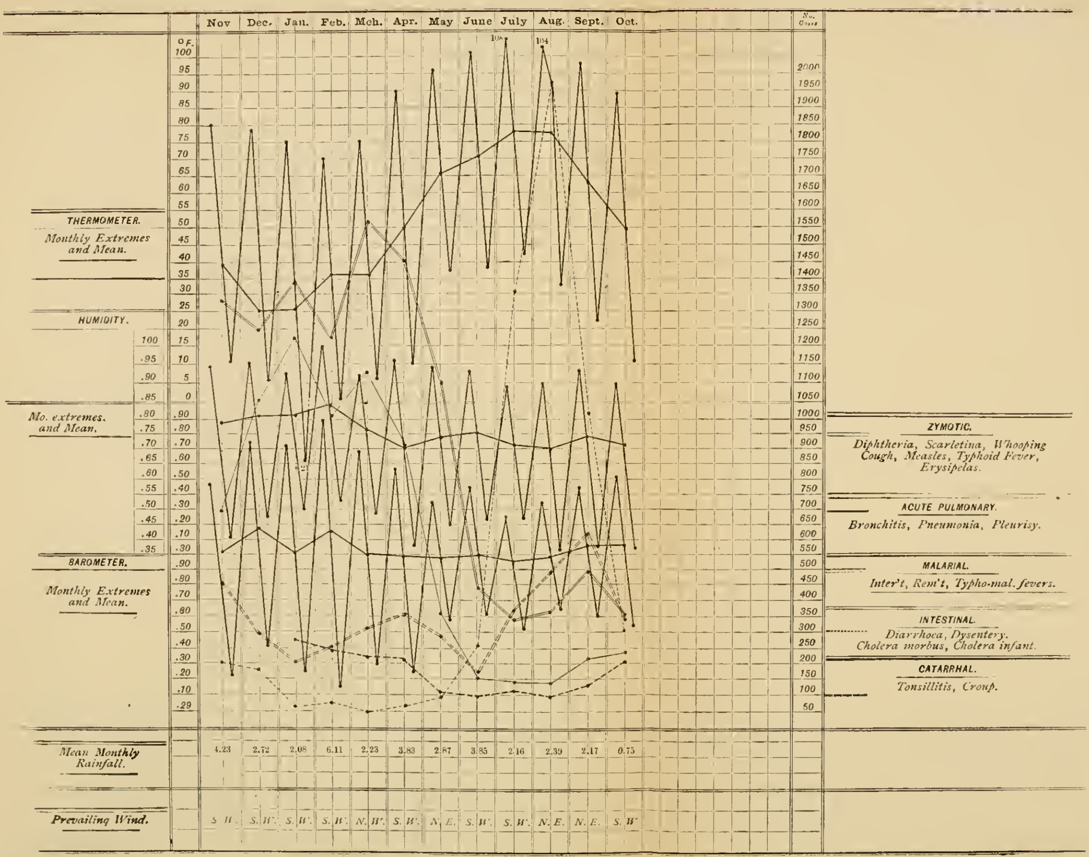
Velocity: Mo. Total Toledo, 5017 Columbus, 5922 Cincinnati, 5751.

Direction	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Cld.	S.W.	S.W.	W.	N.W.	S.W.	S.	S.	S.	S.W.	N.	N.W.	S.W.	N.W.	N.W.	S.	S.	S.W.	N.	W.	S.W.	W.	W.	S.W.	W.	W.	E.	N.W.	S.	N.	N.E.	N.
Col.	S.W.	S.W.	S.W.	W.	W.	S.	S.	S.	S.W.	N.W.	W.	S.W.	W.	W.	E.	S.	S.	N.W.	S.W.	W.	W.	S.W.	S.	W.	N.	N.	N.	S.	N.	N.	W.
Cinti.	W.	S.W.	W.	N.W.	N.W.	S.E.	S.E.	S.W.	W.	N.E.	N.W.	S.W.	N.W.	N.	S.E.	S.E.	S.W.	N.		N.W.	N.W.	S.E.	S.W.	N.	S.E.	N.	N.E.	S.W.	N.	N.E.	S.W.

State of Weather	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Cld.	cl.	cl.	f.	–	cl.	cl.	c.	cl.	–	cl.	f.	cl.	f.	c.	c.	c.	cl.	cl.	c.	cl.	cl.	cl.	cl.	cl.	cl.	cl.	c.	cl.	cl.	c.	c.
Col.	f.	f.	f.	cl.	f.	f.	c.	f.	cl.	cl.	f.	c.	c.	c.	c.	c.	f.	cl.	c.	c.	c.	c.	cl.	cl.	f.	f.	f.	f.	cl.	f.	c.
Cinti.	f.	c.	c.	c.	c.	f.	c.	cl.	c.	–	cl.	c.	c.	c.	c.	c.	c.	c.	c.	cl.	c.	f.	cl.	cl.	c.	cl.	cl.	cl.	cl.	c.	c.

E. R. EGGLESTON, M. D., MT. VERNON, OHIO.

ANNUAL METEOROLOGICAL AND HEALTH CHART FOR OHIO.—Year ending 31st Oct. 1887.



E. R. EGGLESTON, M. D., MOUNT VERNON, OHIO.

REPORT

BY

THOS. C. HOOVER, M. D.,

Chairman of the Committee on Especial Sources of Danger to Life and Health.

ESPECIAL SOURCES OF DANGER TO LIFE AND HEALTH.

Mr. President: I have the honor to submit the following report:

There have been a large number of deaths and serious injuries from avoidable causes, during the past year. The railroads have contributed an unusually large proportion of disastrous accidents. The toy-pistol, the Flobert rifle, the various devices for holiday celebrations, the gasoline or coal oil stove, etc., have each been factors in the destruction of life and limb. To present a report of each casualty would occupy, unnecessarily, an immense space. I will, therefore, only review some of the sources of danger enumerated above.

It occurs to me that it is high time that disastrous accidents on railroads should not result through carelessness or drunkenness of an employe We are becoming alarmingly indifferent to the destruction of a number of people through the fault of a single person. The railroad officials are fully aware of their responsibilities, and when any one suffers through the negligence or drunkenness of an employe, they promptly dismiss that negligent servant. This is as far as they can go. This discharged employe makes application to another company, and perhaps within twenty-four hours is employed at higher wages. His gross carelessness has been the means of financial gain.

This illustration is not a creature of imagination, but instances have occurred within my personal observation. Can it be avoided? Is there a remedy?

I regret that I am not able to suggest a universal remedy, but I believe that a measure of good can be accomplished. Each railroad company has certain men in each department, who engage, or hire, the required workmen; when a man has been discharged for cause above named, it should be the duty of the company so discharging him, to notify the other companies in that vicinity of the discharge, with the name and description of the employe and the cause therefor. The various departments of the company, throughout its system, can be notified likewise, or the notice may be sent to the State Commissioner of Railroads, and he required to notify all railroad companies in the State. My objection to the latter plan would be the delay which would result.

It might be suggested that a penalty for neglect of the above requirements would be necessary to enforce compliance. I believe that the railroad companies would gladly accept the conditions, as they would be much benefitted by the protection afforded them, against subsequent accidents.

"Sleeping while on duty" is too frequently assigned as a cause of disaster. In my opinion, the company is to blame in the great majority of accidents from this source. The injudicious attempt to economize by over-working a small number of employes ought not to be allowed. It should be remembered that men are not machines that can be run for an indefinite time without rest. Within my personal observation, I can cite instances where men have been required to perform exacting and laborious duties for many days in succession, with half the necessary amount of sleep. The remedy lies in the hands of this board, through the Commissioner of Railroads.

The people are to blame for many injuries received by them. With rapidly increasing, and already greatest, facility for doing more business of all kinds, we are still impatient. The railroad, the telegraph and the telephone, are all too slow for us. But a short time ago the stage-coach was fast enough; now the railroad, with its limited express, is not half fast enough. Fearing to lose a minute of precious time, we must jump on or off the train while it is in motion. This unnecessary exposure to danger should not be permitted. It can be prevented by proper legislation. In many of our cities there are ordinances intended for this purpose, but they are practically void for want of enforcement.

On or about the last anniversary of our Independence, the papers were replete with casualties, resulting from the various ingenious explosives invented to emphasize the celebration. The regulation fire-crackers and torpedoes do not satisfy any more. Infernal machines of all kinds are contrived and executed. The incidental killing of an innocent person, who chances to pass at the time of fulmination, only glorifies the invention, and stimulates the emulation of some other genius. It seems to me that it is high time that there should be some law regulating the construction of such noise-producing agents as will, at least, reduce the possible danger to life and limb.

The direct results of these noisy celebrations are not the only evil consequences. This last July, the whole country was kept in disquiet and unrest for several days, including the Fourth. The effect of this prolonged source of fright and disturbance on the sick and excessively timid or nervous element of our population is certainly well understood by this Board. I would not have you infer, Mr. President, that I desire to have our "glorious Fourth" robbed of that which is pleasant music to the American ear, but I would have its celebration restricted to the "day we celebrate."

The harmlessness of the Flobert rifle is becoming terribly dangerous. Within this city, during the past year, one death and four serious accidents have been caused by it. Many are reported from other sections of the State. It would seem that, with possible danger so evidently near, these dangerous weapons would be "touched not and handled not." But the lesson is not heeded.

There are statutory enactments designed for the prevention of some casualties mentioned in this paper, but they are "dead letters" for lack of enforcement. The fact that past legislation for the protection of life has been so indifferently observed, does not induce further enactment, which, I believe, is needed. That more *is* needed I believe will be readily admitted, and I hope to offer some suggestions in a short time for the consideration of this Board.

Respectfully,

THOMAS C. HOOVER, M. D.,
Committee.

MORTALITY STATISTICS OF CINCINNATI,

FOR THE YEAR 1887,

BY

BYRON STANTON, M. D.,

Health Officer.

MORTALITY STATISTICS OF CINCINNATI FOR THE YEAR 1887.

BY BYRON STANTON, M. D., HEALTH OFFICER.

To the President and Members of the Ohio State Board of Health:

GENTLEMEN: Having been honored with a request to furnish for the forthcoming Annual Report of your Board such information regarding the sanitary condition of Cincinnati as might be extracted from the vital statistics for the year 1887, I respectfully submit the following:

The number of deaths during the year was 6,489, an augmentation of 319 over 1886, and corresponding to an annual death rate of 19.96 per 1,000 of the estimated population—325,000.

The following table shows the causes of deaths by classes:

	Males.	Females.
Zymotic diseases	897	770
Constitutional diseases	608	558
Local diseases	1,569	1,235
Developmental diseases	264	295
Deaths from violence	240	53
Totals	3,578	2,911

Of the decedents from zymotic diseases, 889, or 53.32 per cent., were under five years of age.

In 1886 the cause of a high rate of mortality in Cincinnati was the great prevalence of diphtheria, croup, scarlet fever, and measles. In 1887 these influences, in a great measure, subsided, and but for the great number of deaths from typhoid fever, and from the direct and indirect influence of the extreme and protracted heat of July and early August, the mortality for the year would, no doubt, have been less than the average of the last five years. The summer of 1887 was remarkable for its high heat and prolonged drought. The temperature was not as high as in July, 1881, but the period of unusually high temperature continued for a longer time. After a few days of high temperature in July, the death-rate rapidly increased. During that month 122 deaths occurred from sunstroke, and in August twenty-eight were attributed to the same cause. Many other deaths occurred from diseases which might not have proved fatal had it not been for the prostrating effects of the extreme heat.

The mortality for July was 906, which is greater than any other month since the organization of the Health Office, with the single exception of July, 1881, when there were 925 deaths. This high death-rate continued through the first two weeks of August, and then, with the declining temperature, gradually diminished to about the usual rate for that month.

Typhoid Fever has been more than usually prevalent since September. In November the mortality was 135, which is but 0.7 less than the average per year of the last ten years. During the year there were 403 deaths from this disease, just one less than twice the mortality of any preceding year of which we have reliable records. More than half the deaths occurred in November and December. The disease was confined to no one locality, but appeared in all parts of the city, and among all classes of our citizens. The fact that we always have more or less of this disease with us, renders it impossible to trace to its source the present epidemic. So widespread was the disease that the conclusion is inevitable that some widespread influence, not domiciliary, was present.

Cases of typhoid fever are not reported to the Health Office, but the deaths may be regarded as furnishing an index of the distribution of the disease, and these show that no part of the city escaped.

The distribution of the deaths from typhoid fever, by months, is as follows:

January	23	April	10	July	22	October	40
February	10	May	12	August	14	November	135
March	21	June	4	September	23	December	89

Scarlet Fever.—The number of cases of this disease reported during the year was 461. The deaths numbered 19, 85 less than in 1886, and 181 less than the average for the last ten years. The lowest mortality recorded from this disease was 17 in 1867; the highest, 546 in 1879.

Measles.—There were 1,571 cases reported in the year; 1,548 in the first six months, and only 23 in the last six. This disease, which caused 145 deaths in 1886, was the cause of but 73 in 1887. This is 11.5 less than the average of the last ten years. The proportion of deaths to cases, shows that the disease was of a milder type than in 1886.

Small-pox has caused no deaths in the city since 1884. Three cases were reported in February. The first case was a man who had just arrived from

Germany, and contracted the disease on ship-board. The disease was communicated to his daughter and grand-child before its character was discovered. Vaccination of all exposed persons, isolation of the patients, and disinfection of the clothing and apartments prevented further spread of the disease. This is a good illustration of the fact that registration of contagious diseases often secures good results.

WHOOPING COUGH prevailed to some extent throughout the year, deaths occurring in every month except October. Of the 231 cases reported 32 were fatal, 19 less than the average for the last ten years.

DIPHTHERIA AND CROUP.—The deaths from these diseases were 182 and 91 respectively, against 195 and 171 in 1886, when they attained their maximum mortality. The average for the last ten years was: For diphtheria 119.8, and for croup 75. There were 583 cases of diphtheria reported. The cases of croup have not been reported to this office, the law not requiring it. This, I think, is a great mistake. Even if the identity of croup and diphtheria is not admitted, all must admit that many cases of pseudo-membranous laryngitis are diphtheritic, and the distinction between those that may be of such character and those that may not be is often impossible. Such being the case, as a means of protection against the spread of a contagious and dangerous disease, it should be subjected to the same restrictions as diphtheria.

THE DIARRHŒAL DISEASES have caused 585 deaths, against 511 in 1886. Nearly one-eleventh of all the deaths, and more than one-sixth of the deaths under five years, were caused by these diseases. Three hundred and sixty-three of these deaths occurred in July and August, while only 242 occurred in the same months in 1886. The great increase in 1887 was undoubtedly due to the depressing influence of excessive heat, and that this influence was especially felt by young children is shown by the sudden and marked increase in infant mortality in the month of greatest heat—July.

CONSUMPTION, the most fatal of all diseases in this city, has not had an unusual prominence. The deaths registered during the year were 821—12.49 per cent. of the total mortality. This is 29 less than in 1886, and may be less than the actual number, as probably some deaths reported as due to "tuberculosis," "disease of lungs," "marasmus," "debility," etc., were cases of pulmonary consumption, in which diagnosis had been imperfect and registration incorrect. On the other hand, it is, no doubt, the case that some wasting diseases are returned as *consumption* that are not of that character. In the last ten years there have been 7,885 deaths reported from this disease.

The deaths from the *inflammatory diseases* of the *lungs* have slightly increased, *Pneumonia* has caused 493 deaths, against 439 in 1886; *bronchitis*, 242 in 1887, and but 215 in 1886. These diseases seemed to be more fatal in the extremes of life. They offer a special interest from the circumstance that they cause a considerable proportion of our mortality, though they are of little interest in connection with preventive medicine, as they are not preventable by public sanitation. They belong rather to personal hygiene.

The number of deaths from violence—accident, homicide and suicide—was 293; males 240, females 53.

The number of still-births was 423—240 males and 183 females These are not included in the mortality statistics above given.

The number of births reported in 1887 was 6,681. The number reported in 1886 was 8,067. This shows a decline of 1,386 This difference is, no doubt, due to a growing indifference on the part of physicians and midwives to compliance with the law requiring such reports

THE LUMINOUS BEAM,

BY

JOSIAH HARTZELL.

Canton, Ohio.

THE LUMINOUS BEAM.

BY JOSIAH HARTZELL, CANTON, OHIO.

[Read before the Sanitary Convention held under the auspices of the State Board of Health, at Akron, O., January 25 and 26, 1888.]

All intelligent workers in behalf of good health clamor for ventilation.

Why?

To the end that the air to be breathed into the lungs may be abundant in supply and pure in quality.

Why?

This second "why" does not admit of so quick a reply. It will be my aim, in this paper, to furnish an answer which, if not as complete as could be desired, may at least have some suggestive value to those whose studies in this field of experimental knowledge have barely commenced.

Every one is familiar with the appearance of a sunbeam piercing the darkness of a darkened room. If you will enter such a room, entirely darkened, admitting the sunlight only through a very small aperture, and will attentively examine the luminous beam, you will find therein something worthy of your profound attention. If the prevention of sickness, and if good health, are subjects in which you take a real interest, you will linger long in the presence of the beautiful beam. You will admire its silvery splendors, but you may also derive from it lessons that will be converted into priceless blessings for you and those you hold dear.

In viewing the beam, the first question to arise is, What do you see—of what material is its visible portion composed? Although it has a smoky appearance, it is not smoke, as you may quickly convince yourself by blowing a smoke wreath into it. The smoke looks like another and a very different substance. It is not air, for the gases of which air is composed are invisible; it is not light, for that subtle element, which reveals the existence of all things else, is, itself, also, invisible. What we see is, therefore, something borne up by and floating in the air. These particles move forever in lines and convolutions indicating the air currents, which, in turn, derive their motion from unequal temperature and other exterior forces.

The first and most obvious characteristic of these particles is their lightness and exceeding smallness. Some of these particles are not more than one hundred thousandth of an inch in diameter. A magnifying power which would show such a germ or atom one inch in size, would show a man, magnified in the same proportion, over eleven miles high. Speaking of this subject, Professor Tyndall mentions some of these atoms as something beyond the reach of the most powerful microscope.

It seems paradoxical to speak of seeing with the eye that which cannot be seen through the microscope. As a matter of fact we do not see these particles. We see only the light which they scatter. We speak also of seeing the planets, though we see only the light reflected from them.

Another attribute of these particles is that they are organic matter. They are living matter, or are derived from living beings. This is easily proven by experiment. Hold an alcohol lamp under the beam, and the calcined air will ascend through it, making a black opening or spot in its course. This black opening or notch remains filled with air and light, but the heated air arising from the lamp has had the particles burned out of it. There being no particles in it to scatter the sunlight, so much of the beam's track is black, or rather invisible. Inorganic matter is, under such conditions, non-combustible.

We come now to speak of the functions of these aerial particles in the processes of nature, and to inquire concerning the powers with which they are endowed. These are secrets which Dame Nature held on to with an assiduity that defied all aggressive effort, until the year 1837, when Schwann made forcible entrance. Following him, and greatly adding to the discoveries made by him, have been a considerable number of others, of whom Pasteur, Cohn and Koch are the most illustrious representatives. The discovery of paramount importance made and verified by these scientists is that these aerial particles are the indispensable factors in all fermentation and putrefaction—those recognized phases of the return to the atmosphere and to the soil of all that has lived.

A glass of sweet cider, a dead cat, a broken egg, exposed to common air undergo a speedy and radical change. But if our beam fell upon these substances only after they, and the beam itself, had been cleaned of all this dust, as the air was, in the invisible space over the flame of the spirit lamp, then this change would not take place. The cider and egg would remain sweet, and the cat would never putrefy. From time immemorable it has been believed that the oxygen of the atmosphere wrought these changes. This opinion was so learnedly and elaborately defended by Liebig, that the scientific world had to have all the evidence of a doubting Thomas before it would yield. But now the oxygen theory is a thing of the past, and every house wife who puts up a can of fruit shows its fallacy. Most interesting experiments have been made by the Professors whom I have named. I will take time to describe only one, made by Tyndall.

He used an air-tight box, about 2x3 feet in size, and 18 inches high, with a glass front. In the middle of each end was a circular hole, three inches in diameter, covered with glass. Through this box he sent his luminous beam. In the bottom of the box were fixed a dozen test tubes, with half their length projecting below the bottom, while their open upper ends were inside the box. A tube, open at both ends, was fixed in the top of the box, but was tightly stuffed with cotton-wool. This admitted outside air, but strained it of its dust particles. The interior of the box was coated over with glycerine. Admitting the beam, he could see it, presenting, as it did, the same appearance inside the box as it did before entering, and after shining through at the opposite end.

At the end of three days, during which the box had rested motionless, he again sent the beam through the box. This time no beam was visible in the box; all was darkness, though before entering and after leaving the box, the beam stood out clearly defined in the open air as before. The ever-moving air currents had deposited all the floating particles in the box against the side and bottom. The air *in* the box was now the same as that outside, except that it was cleaned of its floating dust. He then prepared an infusion of rabbit meat, and by a skilful device, filled the twelve test tubes inside the box, and also, twelve test tubes just outside the box, bringing them all to the boiling point after being filled. All the twenty-four tubes were treated exactly alike, the upper open ends of twelve of them being inside, and in contact with the dustless air, and twelve opening outside into the common air. By bringing the infusion in all the tubes to the boiling point, it had been sterilized; all the living germs and organisms contained therein were killed.

After a lapse of four days, the infusion in the outside, or exposed tubes, was turbid and flecked with specks of mould, while the fluid in the inside, or protected tubes, was unchanged. Four months afterward, the liquid in the protected tubes remained void of life, and sweet as on the first day, while the infusion in the outside tubes had become thickly turbid, gave out a putrid smell, and swarmed with life. Under a lens of 1,200 diameters this turbidity resolved itself into swarms of bacteria in active motion.

During this entire period, no effort had been made to prevent the inside tubes from meeting the air in free contact. The box contained 1,666 cubic inches of air, and this air was in constant communication with the outside air, through the cotton-wool plug, and yet the liquid in these protected tubes, if not evaporated, would be, to-day, after a lapse of twelve years, as void of life as when the experiment was made. Among the organic products which were similarly treated by Professor Tyndall, and with substantially the same results, were mutton, beef, pork, urine, hay, turnip, haddock, codfish, herring, eel, oyster, liver, kidney, chicken, grouse and pheasant.

Every can of fruit is a witness in this case. All life in the mass is killed by boiling, though oxygen and moisture are retained. But the germ-laden air is kept out by wax or cement. In fact, the identical experiment of Tyndall, is now practically duplicated in every day life, by the use of cans made with elongated necks, so that instead of cement, a cotton-wool plug is inserted, and the preservation of the contents from change is equally well assured.

Having thus apprehended the real functions of such dust particles as are found in healthy air, certain fanciful writers have amused themselves by drawing pictures of the earth's surface, as it would appear in the absence of this dust. The imagination may indeed run riot if it can conceive of a world in which animal and vegetable bodies were not liable to the changes wrought by putrefaction and fermentation; of an earth whose surface was crowded with the corpses of men and animals, that could not possibly be cleared away, or chemically transformed. Such vaticinations are, however, without utility, excepting in so far as they emphasize the importance of the part taken by the dust particles in the compensatory economies of nature, of life succeeding life under changed forms, of the infinitely little endowed with powers of infinite greatness. As well could the metamorphoses upon which continued life depends, go on in the absence of water, food and the gases of the very air itself, as without the floating dust in the luminous beam.

Every one knows, or ought to know, that the sanitary trinity is pure soil, pure air, pure water. Mother Earth, mother of all our blessings—and of our ills, too, if by our unclean practises, we come to merit her chastisements—stands first in importance. The air, although a derivative factor, well deserves the second place in the trinity. We live, move and have our being in this fluid, as fish do in water. Considered in its relations with moisture alone, or with temperature, it is an element of the most profound scientific, as well as of vital interest. But, in the present case, we turn our backs upon these promising fields of physical inquiry, and ask renewed attention to the infinitesimal inhabitants of our luminous beam.

Of this dust-laden air, we take into our lungs, on an average, 18,000 pints daily. Pure air is composed of a little more than one part of oxygen to a little less than four parts of nitrogen, a varying amount of watery vapor, 33-100 of one per cent. of carbonic acid, and a trace of ammonia. Every person should have a minimum space in which to breathe equal to 600 cubic feet, so arranged that the supply could be renewed twice every hour. This is the recommendation of the English Barrack Commissioners, after a most exhaustive study of the subject of ventilation. Breathing is the first thing we do in life, and the last. It is the most important vital process, and a large share of physical derangement is attributable to the presence of impurities in the air we breathe, arising from both suspended and gaseous matters.

Those engaged in the trades and mechanical pursuits suffer largely from the inhalation of suspended impurities, which, in this case, may be of inorganic as well as organic origin. The very names of certain maladies indicate their causes, such as the "Black-lung" of colliers; "Saw-grinders' Consumption;" "Potters' Asthma;" "Brass-founders' Ague;" and "Lead Colic." Match-makers, flour and spice-grinders, iron-grinders, workers in flax, woolen, and cotton mills, all are forced into contact with air rendered more or less objectionable by their occupations. In all these industrial employments it might be shown that both the sick and death-rate have been materially lessened by promoting ventilation; notably, by the application of certain devices for the protection of workmen from the inhalation of dust and hurtful fumes. As a rule, the particles given off into the air by the trades are only irritating, and are hurtful in proportion to their concentration, and it is rational to hope for the abolition of the evils arising therefrom.

The common daily occupations of men illustrate the same truth. Taking the standard of mortality as 100, the rate for barristers is 63, clergymen 71, grocers 76, farmers 85; these are below the average. Above the average we find tailors 109, butchers 111, printers 115, painters 120, barbers 127, liquor-dealers 138, all of which is simply another method of saying that just in proportion to the freshness and purity of the air supply, is health secured and life lengthened.

The atmosphere may also be made unfit for respiration by decomposing vegetable matter, such as the air of marshes, showing an excess of carbonic acid, carburetted hydrogen, and moisture, highly favorable to the growth of infusorial life. Thence come febrile, malarial, and gastric derangements. Entire communities made feeble and pallid by these causes, during the early settlement of the country, are yet within the memory of many of us. Drainage and ventilation is the complete cure.

Air rendered noxious by the effluvia of decomposing animal matter is also to be carefully avoided, laden as it is with ferments, and fertile for the quick reproduction of any infective germ which might by chance get a lodgment therein. Such are the gaseous matters arising from dead animals; from butcheries; and even from grave-yards. The English report on "Extramural Sepulture," in 1850, shows that thickly crowded grave-yards, if not actually productive of disease, do certainly increase the sick and death-rate in the immediate neighborhood.

The subject of sewage, of the disposal of wastes emanating directly from the house and its economies, is so fruitful that I do not dare to enter upon it here. Many books have failed to contain a tithe of the proofs of the damage done to drinking water by sewage, more especially by that which is stored in cess-pools. Nearly as much might be adduced to show the danger of air pollution from the same cause. Thousands of houses, even bed-rooms in houses, are now connected with these fountains of putridity. These connections are often faultily made, both in principle and construction, and then there is no end to the foul myriads that rise up into the beam, and, all night long, are sucked into the breast of the sleeper. Typhoid and remittent, and intermittent fevers along with the rest, sometimes; and then there is the long train of sickness and sorrow, and, perhaps, a train to the cemetery. The remedy for all this is most simple. Study sanitation. Practice its lessons. Be a benefactor. Read about Moses and the paddle. Abolish the cess-pool. Clean up and keep clean.

That putrefying wastes hidden in the ground hurt the air, is a fact of which every sensible person must be convinced. A gas leak, ever so deep in the ground, is perceptible over a large area. (The particles most desirable to be avoided are not, however, always recognizable by any odor.) A constant interchange, induced by differing temperatures, is going on between the ground air and the free atmosphere. In winter time, when the surface is frozen up to the walls of the houses, this interchange goes on most actively inside the houses themselves.

Hence, our much vaunted healthy winter seasons have, notably in towns and cities, become our sickly seasons. The cause is no longer a subject of doubt.

Probably the source of defilement of which our luminous beam has most cause to complain is the vitiation it suffers by respiration and re-respiration. In this I include impurities from both lungs and skin. Inhaled air has 21 parts of oxygen; exhaled air has 16 parts of oxygen and 5 parts of carbonic acid—a poison. Illustrations of air made putrid by respiration are infinite in number, and, in variety, range all the way from the 146 prisoners confined in the "Black Hole of Calcutta," of whom 123 died in one night, to the pale, dyspeptic, headachy laggard, who sleeps in his little pent up bedroom, dragging his slow length along through life in his shameful ignorance of the glorious air outside, which needs only a crack through which to enter and put new blood into his veins and new courage into his heart. Concerning the changes produced by respiration in a closed air space an eminent chemical and biological authority says:

"The amount of oxygen is greatly lessened, the carbonic acid and watery vapor are largely increased, ammonia and organic matters are evolved, and suspended matter, in the shape of low forms of cell-life and epithelium scales, is thrown off."

Now the volume of carbonic acid exhaled by adults will average sixteen cubic feet every day. The moisture given off by the lungs and skin, charged with putrefying substances, as it is, is estimated from 25 to 40 grains in 24 hours. A family of five persons, occupying a room twelve hours a day will send off into it in the course of a year, 38 pounds of organic, putrescible matter. "If, where a number of persons have been assembled, the condensed breath on the window panes be collected and burned, the smell of singed hair will easily show the presence of organic matter. If this condensed breath be allowed to remain for a few days on the glass, the microscope will show that it is alive with animalculæ."

Every one has been present in theaters, conventions, churches, or other crowds, where only several hours of such an air-supply sufficed to produce languor, pain and general discomfort. Protracted breathing of such an atmosphere would be intolerable. Nor is the respiration of the same air over and over again in mixed assemblies, made up of the healthy and unhealthy, devoid of dangers of a quicker capacity than the effete and slow-acting poisons given off by the vital processes. But enough has been said to show the great need of an abundant fresh air supply in public halls, schools, shops and churches. In the planning of these edifices ventilation is apt to be either entirely neglected or put off to the last. Its importance entitles it to stand, if not first, certainly side by side with temperature and light.

The most potent and widespread of the predisposing causes of disease is now recognized as being air that has been already more or less frequently respired. There is indeed food for grave reflection in the thought that most of the poisons from which we suffer are made by ourselves—that "our own breath is our greatest enemy." The dangers menacing us from exterior causes are small in comparison.

That pain is not felt at once is not evidence that no harm has been done. The effects of vitiated air are slowly, perhaps imperceptibly cumulative, and when, either from alcoholism, sewage air poisoning, or crowd poisoning, the system is depressed and the vitality of the tissues is reduced below the resisting point, then the danger from infection is immeasurably augmented. Pure air is abundant. Let every householder see that his house admits a full and free supply.

One-third of our lives is passed in our bed-rooms. At least once a day the free sunlight and air should be permitted to penetrate them to their remotest parts. There the luminous beam should shine with greatest effulgence and purity, thus furnishing to the Sweet Restorer the substance with which to replace our wasted tissues with sound material, and send us forth on the morrow with replenished vigor, and a step elastic with good health.

Now we have seen that the air everywhere holds in suspension the seeds of putrefaction and fermentation; that in the fruition of these seeds, benign changes of inexpressible utility in the terrestrial economy are wrought. Upon healthy living beings, however, it is probable that they, in their drier state, exercise no appreciable influence. They completely change organic matter, both in form and texture. Upon organized matter they are inert, when they get access to the body only through natural channels in a state of health. If they are introduced into the blood through open wounds, there is no such immunity. But, even under these conditions, the careful application of germicides has obviated dangerous consequences from this source. This method, also an offspring of the germ theory, is one of the most important forward steps in modern surgery.

The germs of infectious diseases are organized matter. These invisible foes of human life multiply themselves indefinitely from the products of decay. When epidemics of filth-disease are abroad in the land, communities that have set their houses in order, rejoice in the immunity arising from the absence of that putresence which is the favorite nourishment of these dreadful destroyers. Whether the ray beams upon us as a friend or an enemy, depends, therefore, upon the floating particles contained in it, other than those we have already been considering.

Air should be inhaled through the nose, by which its temperature may be modified; and many particles that might work injury to the more delicate texture of the lungs, are held back by its moist interior surfaces. But at times the beam becomes the home of enemies of so subtle a character that they defy the watchfulness of our nasal outpost, and fix their lodgment in the system. The boy with the whooping-cough comes shouting along and lances into the air that invisible something which, inhaled by another boy, makes him a holy terror all winter long. Small-pox and scarlatina, in the full vigor of all their terrible powers, may ride lightly and unseen among the children of the beam.

It is important to keep in mind the distinction between these dry, floating germs and the soft, sensitive organism, called bacteria, to which they give birth.

The incubative term and process of these living atoms, forms a most interesting study, but here the debatable band between established fact and theory has considerable width. It is proven—

1st. That this floating dust is organic, being partially living germs.

2d. That, being deposited in a favoring element, the latter give rise to forms of life, sometimes with and sometimes without motion, in periods ranging from one hour to fourteen days.

3d. That, while the germs of putrefaction, everywhere present in the atmosphere, are powerless to disturb the functions of animals in a state of health, other germs are sometimes present, which, when inhaled into the throat and lungs, find there the conditions suited to their development and reproduction, resulting in impaired vitality, and often in death.

4th. The prevalence of the poisonous germs, whether of diseases well or illy-defined, is powerfully stimulated by the presence of heat, moisture, and the gases of organic decomposition.

One theory is that the virulence of certain diseases is greatest during the incubation of the germ. This view gets some plausibility from the fact that first cases, in an epidemic of filth disease, are the most violent and deadly, and that this violence is apt to be more and more modified until the epidemic dies out. A portion of the energy of the virus consists in its passage from the germ state to that of the finished organism.

Other phenomena warrant the belief that other maladies, notably such as are communicated by contaminated drinking water, are induced by the perfected bacterium.

A further investigation of this phase of our subject would be of interest, but in a limited review like this, it may well be omitted, until theory has been supplanted by the explicitness and authority of the fact.

Some of these children of the beam, like other *enfants terrible,* with whom we have had a more tangible acquaintance, have their inexplicable whims. If they have once essayed their powers on a human body, and the body survives, they generally furnish it a certificate of immunity. This class of non-recurrent maladies is to that extent self-limiting. They have also been limited, with priceless blessings to humanity, by artificial means—by vaccination. In the sanitary millenium that is to come, the roll of the twelve apostles will commence with the names of Jenner and Pasteur.

The most curious and important fact, recently established, is that many of these disease germs are now artificially cultivated outside of the human body. Dr. Koch has bottled up in his laboratory, at Berlin, the materials with which he can infect certain animals with cholera and consumption at will, with absolute certainty. These and other dangerous organisms have been photographed, engraved and shown, as are other forms of life. Their virulence can be increased, and, in a few instances, diminished, or "tamed," as in the case of small-pox, already referred to. But, while a few additions have been made to this "taming" process, and we hopefully wait for others to be discovered, there are three ways of dealing with these enimies: First, disinfection—destroy the germs; second, cleanliness—destroy what they feed on; third, isolation—cut the channel of communication.

Yet, while purity of environment, isolation, and disinfection may bar these scourges at a safe distance, there is in the prevention of these preventable ills, imperative need of organized effort. Happily, we have at length, even in Ohio, a nucleus about which the helpers in this field may rally. It is our duty to give to our State Board of Health that help and that quick co-operation which will enable it to interpose for the arrest of epidemics, whether of foreign or domestic origin, with all the light that scientific experiment affords, and with an ample equipment of power.

The blessings that have been reaped in this field constitute the brightest page in human achievement. The retrospect of only a few lifetimes carries us back to the era when the average duration of life was only twenty years, and when one-fourth the population of Europe, twenty-five millions of people, fell before a foul and loathsome disorder. Now the mortality record of all the cities in the world is published statedly, and any undue swelling of figures fixes instant attention upon the danger point, and results in barring its extension with the safeguards of modern discovery.

Health is not the exclusive possession of any class or rank. Money cannot buy it, neither will poverty drive it away.

Diogenes, poorest of beggars, gave the world a most valuable hygienic maxim when he told Alexander, greatest of conquerors, to "stand out of his sunshine." Nor can health be secured by mere legislation. A law may secure a pure water supply, but it cannot compel people to use it. Sanitation must come through individual effort. With all the collective help that can be obtained, there will remain abundant need of personal vigilance. Only a fool shuts his eyes until he runs against a post. It is known with perfect certitude that reproductive parasitic life is the cause of epidemic disease, and a man cannot be exonerated from the consequences of his acts by pleading ignorance, either of God's laws or man's laws. If he sees a thistle growing in his field, he knows that a thistle seed has been wafted into his grounds. And if a contagious disease is developed in his family, he can rest equally well assured that the seed which gives rise to it is derived from a previous case of the same disease.

Every epidemic disease produces its like as assuredly as the thistle.

Common seeds do not always germinate, neither do the infinitessimal seeds in our luminous beam. Conditions of temperature, moisture and light have their varied effect upon the one as they do upon the other. We know that the germs of putrefaction require moisture for their fructification. Heat kills them. Warmth and darkness promote their multiplication and development They are benumbed by cold.

For this reason meat, and even fish, may be kept sweet for long periods, by the application of a low temperature. Three men fell into an Alpine crevasse, and, being frozen into the ice, preserved their integrity of body for forty years. The flesh of the hairy elephant, found in the Siberian glacier, after a lapse of probably thousands of years, was not affected by putridity, but was nutritious and adapted to the support of animal life.

The germs of virulent diseases are sometimes long-lived. The only safety is either in their avoidance or destruction. Clothing, especially woolen fabrics, if not purified by thorough ventilation or disinfection, has been known to convey scarlet fever, one, two and even three years after it was impregnated with the contagion of that disease A glaring illustration of the possible disastrous results of incaution in this respect, comes under my notice while preparing this paper. I cut the same out of the current daily telegrams, and read as follows:

"DIPHTHERIA AT WELLSVILLE, OHIO.

"WELLSVILLE, O., Dec. 15.

"Diphtheria is epidemic here. After a post-mortem examination on one of the victims, Dr. N. C. Kale took a portion of the diseased membrane of the throat to his home for investigation. He carelessly allowed his children to view the germs through the microscope, and two of them were attacked with the disease and died, while the doctor himself succumbed to the disease Tuesday. Five other children are now at the point of death."

The detriment that may ensue from these influences, depends somewhat, as I have already shown, upon receptivity, upon physical condition, and this, in turn, depends very largely upon the presence or absence of a pure air supply. It is also shown that certain irregularities must be attributed to states of the atmosphere which have been spoken of as bacterial clouds. One fact has been verified by frequent experiment, viz.: that these living organisms are far more abundant in the contiguity of inhabited districts, than where animal life is absent, or nearly so.

Pasteur found that meat infusions left open to the air, were in a given time, twenty-one times as liable to be infected in Paris as on the Merde Glace. A great many English experiments, having for their object the testing of city and country air in this respect, are on record, and are, in all instances, confirmative of the statement I have made.

One of the most venomous parasites that may rise into the beam, and scatter its light, has been differentiated by Dr. Koch—the inciting cause of phthisis. Its mode of conveyance may be the sputa of the consumptive, which, being dried and ground into dust under foot, rises into the air and gets a lodgment in the lungs. Circumstances antedating Koch's discovery, render this method of infection strikingly probable. In 1858 the British Army Sanitary Commission proved, beyond all doubt, that the excessive mortality from consumption among soldiers, in particular regiments, was due to overcrowding and lack of ventilation. Previous to their report, the soldier in the barracks of the Foot Guards, had only 331 cubic feet of air, and the phthisis mortality averaged 14 per 1,000. In the Horse Guards, where 572 cubic feet of air was allowed to each man, the mortality from consumption did not exceed 7 per 1,000. This mortality rate was about the same in all climates, the vitiated air of the barracks being the only condition common to them all. The Commissioners ordered the allowance of air space to be increased, in consequence of which the number of phthisical cases was greatly diminished.

These facts bring into clear relief the danger of frequenting places where we are liable to take into our lungs the injurious refuse materials given off in air that has been already used. Filthy, and often diseased people, are liable to push their way into such crowds, and to load the air with foul and pestiferous emanations, which may thus come in contact with the blood stream, which, at the rate of many barrels a day, is coursing its way through the fine capillary vessels of the lungs.

In preparing this study of atmospheric phenomena, I have relied partially upon the labors of purely scientific experimenters, but chiefly upon the works of physicians. And this furnishes me a pretext for stating it, as my personal experience, that the more ardently we endeavor to pry into the reasons for ill health, the more hearty and cordial is the co-operation we get from the truly intelligent physician, upon whom we are, after all, forced to rely. All of us cannot be physicians, but all can study how to live, and the true physician stands there ever ready to be our schoolmaster. He has himself in the past twenty years, made forward strides just as far-reaching, and of far more blissful import to our firesides than aught that has dazzled the world from the realm of the mechanic arts. The beam of sanitation, once obscured by prejudice and ignorance, and wintry with empiricisms, has been made gloriously luminous by the self-denying and self-imposed labors of the greatest benefactors of mankind. It shines upon the pathway of life, revealing the rocks and pitfalls that beset its course, and showing many an open gate by which we may escape that evil heritage of ills, to which all mortal flesh is heir.

THE ORIGIN AND PROPAGATION OF DIPHTHERIA,

BY

B. B. LOUGHEAD, M. D.,

Ravenna, Ohio.

ORIGIN AND PROPAGATION OF DIPHTHERIA.

B. B. LOUGHEAD, M. D., RAVENNA, OHIO.

[Read before the Sanitary Convention, held under the auspices of the State Board of Health, at Akron, O , January 25 and 26, 1888.]

Diphtheria is a specific, contagious disease.

Its history is lost in obscurity. Some hints of its prevalence are found in our oldest medical literature. We know that it was recognized 2,000 years ago, and it is possible that some of the plagues of ancient times were due to the same poisons that swell our mortality lists to-day. Hippocrates was one of the first observers to describe the disease, and he gives the name of the first recorded victim of its violence.

Being a specific disease, its virus is peculiar to itself, and is not capable of producing any other disease. The poison of diphtheria produces diphtheria, and diphtheria only.

The power of producing this virus has been ascribed to as many different causes as there have been different conditions under which the disease has been observed. At one time sewer-gas has been declared the cause, and at other times it has been compost heaps, cess-pools, impure water, crowded tenements, decaying vegetation, and so on. Any odor about the premises where a case occurs, obnoxious to the delicate and æsthetic olfactory organs of the attending physician has been denounced as the *causus morbi*. Indeed, so anxious have we become to fix the cause of this disease upon filth, that no family can suffer from diphtheria and not also suffer the imputation of being unclean! Thousands of people have perished from diphtheria who never were within five hundaed miles of a sewer, and thousands of others have perished from its deadly power out of homes as clean and pure as science and care could make them. I believe in cleanliness—believe it is next to godliness, but I believe uncleanliness has enough power for evil without ascribing to it the powers of producing a specific virus.

If a disease occurs under varied and dissimilar conditions, it is reasonable to conclude that it is not dependent upon the conditions for its existence. This I believe to be true of diphtheria, and that the disease is microphytic in its origin—that it originates in a pathogenic micro-organism, and should be classed with those diseases that have been demonstrated as microphytic.

It is not the purpose of this paper to discuss the germ theory of disease—which is no longer a theory, but a demonstrated fact, but to point out at this place that diphtheria, both by analogy and by experiment, may safely be classed as a disease produced by a pathogenic micro-organism. If the the disease is caused by a microbe, it must be conceded that the disease does not originate *de novo.* No combination of unhygienic conditions can create a specific organism, the germ of that organism being absent. The germs of the diphtheria of to-day are direct descendants of the germs that caused the disease that Hippocrates and Celsus treated ages ago. The hygienic surroundings may have much to do with the propagation of the disease; i. e , filth may afford for these microbes nourishing material that may make them more perniciously active, but filth can no more originate diphtheria than it can originate small-pox.

Although the presence of the specific microbes are essential to the disease, it is evident that some other factor is necessary also; for all who are exposed to the infection do not suffer from its pernicious action. Indeed, the same individual may be exposed to the contagion many times, and finally fall a victim to its virulence. This unknown factor within the individual, which inhibits the action of the poison at one time, and urges it on to pernicious activity at another, is a most interesting field for inquiry.

If this unknown factor in the disease is a condition either of the system or the parts invaded, what constitutes that condition? We name this unknown factor in the disease "resistance to the infection'" and "susceptibility to the infection," but our names explain nothing. That there is some thing or some condition present at one time and absent at another which decides, not only whether there shall be a disease process, but also the extent or severity of that process, all who have observed the disease will probably admit. Further than this we have no facts upon which to predicate a solution of the problem.

The second inquiry of our subject is the propagation of diphtheria. I suppose those who assigned this subject meant by the propagation of diphtheria, not only the methods by which the virus renews itself or retains its vitality, but also the various means by which the infection is disseminated.

If the disease is caused by a micro-organism, like all organic life it must soon perish unless it renews itself through fertilization. The exact length of time a germ of the disease retains its vitality is not known. Probably but a few weeks—from six to twelve. Instances have been recorded where the disease has been induced by exposure to some infected garment some weeks after the article was infected. Even in these cases there may have been fertilization without renewal through the disease process, but the generation ultimately perishes for lack of nourishing material. The germ undoubtedly renews itself with greatest fertility through the diphtheritic process. This process may occur either in the human being or the lower animals. The most frequent method by which the disease is spread is by direct contact with those suffering from it. It is by this means that the disease spreads among members of the same family, and in neighborhoods where a sympathetic interest is taken in any case of sickness, and the friends and neighbors assist in the work of nursing the sick. The disease is often carried by some convalescent whose clothing has not been properly disinfected, returning to school or visiting among neighbors. In this way a single case may be the means of infecting a whole neighborhood. Members of a family in which a mild case of sore throat exists may carry the infection miles away by a visit to some relative. A case of this kind occurred of which I have personal knowledge. One of Mrs. A.'s children had slight sore throat, but not sufficient to call a physician. A few days later Mrs. A. visited her sister, four miles away. When she returned home at night she found her two other children sick with diphtheria, and four or five days later one of her sister's children was taken with true diphtheria. In this case there was no other means of exposure, and Mrs. A. undoubtedly carried the contagion in her clothes.

Many cases where convalescents have spread the disease could be cited. Domestic animals may be carriers of the contagion. The shaggy hair of the common poodle dog may bear the infection from house to house in a neighborhood where he is the pet of all the children, being used to amuse a child sick with the disease, and afterward caressed and fondled by children in other families. Domestic animals not only carry the disease from house to house, but they may suffer from diphtheria, and communicate it to members of the family where they are harbored. I will show by illustrations which follow, first, that domestic animals having the disease may communicate it to children who play with them; second, that the disease may be communicated to domestic animals by children suffering from diphtheria, and by the slops from the sick room; third, that diphtheria may be communicated from one lower animal to another of different species. That diphtheria is communicated from lower animals to human beings, is well illustrated by a case reported in the Medical Record by Dr. William Bunce, of Oberlin, whom many of you know. He says: A young lady eighteen years of age had diphtheria of a severe type, which terminated fatally on the third day. In a short time the disease developed in the mother and two remaining daughters. A half-grown cat in the room was found to have well-marked diphtheritic membrane in its throat; it was also learned that its mother and four other kittens had been in the same condition. The girls had endeavored to cure the cats by removing the membrane. In this way they had exposed themselves to the contagious influences of the disease.

That domestic animals may take diphtheria from being handled by children who are suffering from the disease, is illustrated by a case reported in the Medical and Surgical Journal. In a house where there were five children sick with diphtheria, three kittens that played with the children sickened and died. Post-mortem examination showed diphtheritic membrane in their throats. Dr. S. Roth, of Kitzengen, observed an epidemic of diphtheria in a flock of hens. It was caused by the slops from a room where two children had been sick with diphtheria being thrown upon a dung heap in the yard where the fowls were kept.

Mr. Cole, a veterinary surgeon of Australia, reports a case illustrating that the disease can be communicated from one animal to another of a different species. A calf had a throat disease (presumably diphtheria), and died. A sow got access to the carcass, and ate some of the meat. Within a few days some of the pigs were taken down with throat disease, and a short time after the sow and her young pigs were victims to the disease.

It is unfortunate that we have not a fuller report of this case, as it might throw some light on the question whether the meat of the calf communicated the disease to the sow, and also whether the virus was excreted through the milk, and thus infected the pigs.

These illustrations have been chosen from many which are at hand, all proving clearly that the lower animals do suffer from this disease and it follows that the virus is kept alive by renewing itself through the disease process in animals of lower orders, and many mysterious outbreaks of diphtheria which have seemed to indicate the *de novo* origin of the disease may be the result of exposure to the disease in some of the lower animals.

Milk from diseased cows has been supposed to disseminate the poison of diphtheria. It is not in place here to discuss the question whether the garget in cows is a true diphtheritic process, although there is considerable evidence to show that the milk from a cow having garget, or perl-speck, does communicate diphtheria to those using the milk. It is sufficient to know that milk may be a carrier of the germs of the disease.

An epidemic occurred in the Oakleigh Police Station, and was supposed to have originated in the milk of a diseased cow, which had been used by the inmates of the Station.

The following cases, taken from reports in the British Medical Journal, are in point:

At the Princess Mary's Village Homes forty-eight persons were attacked with diphtheria. The water-supply of the farms, which supplied milk to the homes, was found to be impure. One of the cows had the garget, and the epidemic began to decline rapidly eight days after the stoppage of the milk-supply. There was nothing else but the milk to which the epidemic could be attributed.

At Leatherhead, in the course of six weeks, fifty-five persons were attacked with diphtheria. There was nothing in common among the families to which the disease could be traced except the milk-supply. Almost all of the families attacked were supplied from the same dairy.

At Sutton fifteen persons were attacked with diphtheria in two days. These persons lived in different parts of the town, and under good sanitary conditions, but they were all supplied with milk from the same dairy. Nothing wrong could be found at the dairy.

Although the evidence that milk is the carrier of germs is not conclusive, it is sufficient to make it strongly probable that such is the case, and makes it a possible means by which the virus is propagated.

A strong wind prevailing in one direction for some days has been observed to determine the direction of the spread of an epidemic. By this means also houses remote from the disease, where complete isolation has been practiced, have been affected, although at some distance from the disease. In thirty epidemics of diphtheria observed in England, with special reference to aërial propagation, it was found that the direction of the wind had special force in disseminating the disease. Houses that were completely isolated suffered from the disease when the wind prevailed from the direction where it was known to exist I believe it is generally conceded that the poison of malarial diseases may be carried by the wind, and there can be no reason why the germs of diphtheria may not be driven by the wind, even to a great distance. Indeed, it may easily be true that certain conditions of the atmosphere favor the propagatian of contagious diseases, and certain other conditions may be unfavorable to such propagation. This is certainly a field in which our State Board of Health can labor with the prospect of arriving at the truth by collecting a large amount of data.

There are many other methods by which the disease may be propagated, but of which time will not permit us to speak. When we throw away entirely the idea of mystery, which has clouded our view of its orign, and look upon the disease, not as a mysterious visitation "that comes," but regard it as something that is brought, then our means of preventing the spread of the infection will become much more effectual.

From a study of the origin and propagation of diphtheria we easily pass to the means of preventing infection. A knowledge of the origin and propagation of the disease is of very little use except as it assists in determining means of prevention and of treatment.

Prevention divides itself into three methods, two of which are in common use; the third may be available, but is little used at present.

Isolation is the oldest method by which the spread of contagious dieases is limited. It can never be complete, and therefore alone can never succeed in fully restraining the spread of the contagion; that it is not as complete in diph theria as in small-pox is owing to the lack of knowledge among the people of the extreme contagiousness of diphtheria, and also that one attack does not afford immunity from succeeding attacks. Thus there is no class of people to act as nurses who are not subject to the influence of the infection. That it is not regarded by the people as an extremely contagious disease I believe to be largely due to the teaching of the profession. Many physicians to-day do not consider it a highly contagious disease, and great carelessness is shown by the families who have the disease in the matter of sending other children to school, attending church, visiting neighbors, etc.

The second means by which it is sought to limit the spread of the infection is by disinfection.

By this term is meant the use of such means as shall effectually destroy the contagion. Undoubtedly in this disease germicides take first rank. I shall not enumerate the large class of articles that are used to accomplish this purpose.

No inferior article should be trusted when a better and more efficient article is at hand. The State Board of Health has issued a pamphlet on disinfectants in diphtheria, and their instructions are more complete than any I can give. Disinfection should include all articles of furniture, tapistry, clothing, and even the house itself.

The third and last way by which the spread of the disease is limited—I should say, will be limited in the future—is by the use of some agent by those exposed to the infection by which the nourishing material upon which the virus thrives shall be removed and the germs of the disease shall fall upon sterile soil. This has been accomplished in the case of small-pox.

Pasteur is attempting the same thing in rabies. We have an agent in quinine which certainly inhibits the poison of malaria upon the system. It is just as probable that we shall find an agent that will render the system invulnerable to the poison of diphtheria, or at least so limit the destructive power of the germs that the disease shall only appear in a benign and harmless form, as that vaccinia should supplant smallpox, or that quinine should render negative the malign influence of malaria. When this agent is once found—and I believe it will be found—epidemics of this dread disease will be unknown and only sporadic cases occur, as is the case now with small-pox.

SANITARY MANAGEMENT OF CONTAGIOUS AND INFECTIOUS DISEASES,

BY

G. C. ASHMUN, M. D.,

Health Officer, Cleveland, O.

THE SANITARY MANAGEMENT OF CONTAGIOUS AND INFECTIOUS DISEASES.

BY G. C. ASHMUN, M. D., HEALTH OFFICER.

[Read before the Sanitary Convention, held under the auspices of the State Board of Health, at Akron, O., January 25th and 26th, 1888.]

In all attempts to limit or prevent the spread of contagious and infectious diseases, two parties, or classes of people, are at once brought into consideration.

1. Those already infected.
2. The non-infected but susceptible.

Whatever is done in a sanitary point, has direct reference to one or both of these classes. A commercial interest often, and perhaps generally, soon enters the field of observation and effort, as a more or less controlling force, and has to be met, but it is to a degree, aside from the main purpose of sanitary effort, *i. e.*, preservation of life and health.

Let us separate these two classes in considering what may be done for each.

First then, it is proper to bear in mind, that the person or persons affected, are in their relation to their fellows not affected, entitled to a fair opportunity for recovery. Whatever is done for or with them, in reference to others, should always embrace proper care in respect to the particular disease from which they are suffering. By proper care, is meant the best which can be done under particular circumstances. It may be necessary under urgent situations, to sacrifice the interests of one or the few for the good of the many, as in war, but our natures revolt at such necessities. With preparations made in advance, such sacrifice ought to be rarely necessary in this day of rapid and trustworthy means of communication with every portion of the civilized world.

The present condition of most or all maritime quarantine stations, with their inadequate provisions for the sick, has justly called out public condemnation. But where is the city or town in which there is any provision whatever for the isolation and proper care of cases of contagious disease, other than those of small-pox? *Isolation* of such cases, has long been a measure adapted to limit the extension of different forms of contagious disease. Quarantine as between countries and ports—the maritime quarantine of our government, with its offices and stations—and at various times and places, inland quarantine has been attempted, all based upon the detection and isolation of persons or goods infected. In sanitary intention, *isolation* includes the affected, their clothing, bedding, utensils, or whatever may have come into immediate relation and contact with them. And not only those in which disease has made its appearance, but also those who have been exposed and are liable to exhibit the effects of a contagion, must be kept under surveillance until such time has elapsed as may suffice to show that no process of incubation is at work with them, and to demonstrate their fitness for general society. It is clear, that these two divisions of infected people, should not be subjected to the same restrictions, and yet it is equally clear, that in some forms of contagious disease, neither can be safely allowed to mingle with the non-infected. The length of time or duration of isolation necessary to secure safety, varies with different diseases, but, in any effective application of the method, the time should extend to the complete restoration of health in the one instance, and beyond all possible duration of an incubative stage in the other. In the case of eruptive fevers, until the skin, hair and nails are completely renewed, there is danger. Now any such complete and effective isolation, can rarely, if ever, be attained in any private dwelling. For this reason, and from the fact that they may be better treated at the same time, all dangerous contagious cases should be provided a place to which they may be removed, and where isolation can be made and maintained in an effective manner. It is my settled conviction, that all those diseases which develop and spread exclusively within and by the *genus homo* can be stopped abruptly and completely by a systematic sanitary isolation.

An adjunct, and possibly a relief to protracted isolation, is found in disinfection. The expense of establishing and maintaining quarantine methods, with their interference with commerce and travel, has led to the hope and attempt to substitute disinfection therefor, in a measure. This both for ships, their passengers, and cargoes. By heat and various chemical agents, applied by processes devised to meet the object, the effort is made to lessen the time of detention. The basis of such an effort, is the belief that germs peculiar to a disease, or some other form of morbific material exists, which may be rendered inert by such means. Such efforts must be regarded as still in an experimental stage, but there is some reason to believe that, with the cremation or chemical treatment of excreta, and, in the case of eruptive diseases, the disinfection of the surface of the body throughout, by cleanliness and chemical substances, this attempt may lead to an advanced position in this matter. As these cases are now managed, in private houses, with little or no official direction or restraint tolerated, with the physician or other visitor circulating freely with affected and non-affected, there is practically nothing accomplished. The keeping of children of school age from such houses out of the public schools, is a very small step in the right direction; but the same children, the adults, and younger children, can go from the bedside or bed into the street, the stores, cars, churches, public halls, or any public or private place, carrying whatever may attach to them from the sick in their homes.

This, then, for the infected—isolation, proper care, disinfection, restriction of funerals.

Second—For the non-infected, but susceptible. Notification of the existence, character, and location of cases of a dangerous, contagious disease, enables the intelligent to avoid contact. To this end, consular reports of disease are now made between all civilized nations, thus informing each and all of points of danger. In this way precautions can be taken to protect against the introduction of such diseases. In respect to the diseases known to be chiefly limited to children, or any class, information of such a fact gives opportunity to shield that class. And, indeed, any system by which is given correct information in regard to such diseases, their dangers, and methods of extension, must be regarded of great value in the effort to escape them.

Inoculation has received an impetus of late in respect to other diseases than small-pox. There is some ground for hope that successful results may be reached, but at the present time the experiments are not conclusive as to its value in other diseases. From the oft-repeated observation of the fact that a proportion of people pass unscathed, even when exposed to contagion in virulent forms, the conclusion is reached that the condition of individuals at the time of exposure has a determining influence upon the result. Thus, in one instance, there is great resistance, and in another very little. It is held by some that almost any of the contagious diseases may, under certain states and conditions of the individual, have an anto-genetic origin. Whether this is ever the case or not, it is clear that each individual has, in a measure, what may be termed a natural resistance to diseased processes, which may become impaired to any degree, or kept to its full power, and even increased temporarily. Certain influences of air, temperature, food, water, and habit of body, may certainly be regarded as predisposing causes, if not actually producing some of these diseases. Such being the case, the bodily condition of the non-infected should be kept at its best resisting state, so that accidental exposure may not necessarily be followed by disease. Food, tonics, stimulants, and excretory glandular excitants may be properly invoked as aids in a time of peril, with cleanliness, attention to diet, and avoidance of everything which impairs vitality. Anxiety, want of sleep, bodily fatigue, insufficient or improper food or water, are all potent aids to the reception of contagious diseases. Then from sleeping-rooms with the air in them loaded with exhalations and emanations from the bodies of those occupying them; and living rooms, with ground, cellar, and basement air invited into them by heat, and no provision for ventilation, come other influences. In the area surrounding the dwelling may be bad drains or no drains, cess-pools, vaults, or absence of both, or of any care as to decomposing refuse, all operating to overpower what of natural resistance people thus placed may have had; and contagious disease finds easy access and lodgment. And vitality thus impaired has the additional injury of decreasing the probabilities of recovery, and of increasing the virulence and propagating activity of the disease introduced. It may be stated that, in this way, there are created favorable or unfavorable conditions for the development and spread of diseases, which may even require a specific germ or element for the starting, and the condition becomes the controling factor in the case as to the result.

An obstacle to progress, in efforts to prevent the spread of contagious diseases, comes from the sentiment that these diseases are always controlable by treatment. I shall never forget the wail of grief from a mother, who had deliberately exposed her child to "measles," with the tacit sanction of the family physician, under the impression that the disease was insignificant and curable, but who found her child laid in its coffin as the result! Thus, any security based upon remedies or skill, which leads to the want of preventive care, is misleading and dangerous. And the physician who extends or aids any such sentiment among those under his influence, may expect to reap reproaches when the hour of trial comes. The debated and debatable questions as to the diseases which should be included under the head of contagious, infectious, or both, with the increase of knowledge bearing upon the points involved brought forth in these later years, may better be considered elsewhere. The idea of contagion by specific germ appears itself to have been both contagious and infectious, so that to-day sanitarians the world over are chiefly fighting germs. Whether true or false, in whole or in part, the methods of prevention and treatment, based upon such views, are yielding good results. In the eruptive fevers, in epidemic cholera, yellow fever, forms of skin and eye diseases, puerperal diseases, diphtheria, erysipelas, typhoid and typhus fevers, more or less success has been reported in the adoption of anti-septic and germicidic methods as measures of prevention. Each disease has its peculiarities, which have to be met by peculiar adaptations, but the principle guiding the action is the same. The details have to be supplied by knowledge of the character, duration and tendencies of each class or case of these diseases.

In conclusion, the question is presented as to the provision, or want of provision now made in our various communities for the proper care of the cases of dangerous contagious diseases, for the best interests of both the affected and non-affected. It would appear that no wiser expenditure of money could be made than adequate hospital accommodations for this class of cases. That it must be provided especially for them, is clear. They cannot all be associated intimately with other hospital cases What would this city do with a case or cases of Asiatic cholera occurring to-morrow? The knowledge that such cases existed in the city, not isolated, nor the public shielded in any way, would soon destroy the business interests of the town to many times the cost of hospital accommodations. And with all care and precautions likely to be exercised at the numerous sea-ports of our country, or along inland channels of transmission, it may safely be assumed that the demand for more watchfulness and protection will long continue. And, proper care of the first case is worth everything in the prevention of an epidemic.

MANAGEMENT OF FUNERALS AND CARE OF DEAD BODIES.

The custom of holding religious services in the presence of dead bodies may be seriously questioned under any circumstances, and certainly when death has resulted from contagious disease, to invite a gathering of susceptible people into the same building or apartments, or to take such a body into a church or other public assembly room, cannot be defended on any sanitary grounds. Any interference with long-established customs and religious observances is usually resented, and surely no one could wish to interfere without good and sufficient reason. Yet here is one of the scattering places of such diseases; and to prevent more deaths and other funerals, the hand of authority must dictate to thoughtless people. In a place where no Board of Health or Health Officer is in exercise of authority, the justice of the peace or constable should be directed to carry out instructions formulated by the State Board. The preparation of the body, placing it in its burial case, transporting it to the final resting place, the restraining of the susceptible from contact or infection, are all practical points involved in the death and burial of such cases.

THE SEWERAGE SYSTEM OF THE CITY OF AKRON,

BY

W. D. CHAPMAN,

Akron, Ohio.

THE SEWERAGE SYSTEM OF THE CITY OF AKRON.

BY W. D. CHAPMAN, *Akron, O.*

[Read before the Sanitary Convention, held under the auspices of the State Board of Health, at Akron, Ohio, January 25 and 26, 1888.]

The sewerage system of the city of Akron, as far as constructed, is designed to carry storm-water as well as sewage to a point near the Howard street bridge, where, by an out-fall sewer, the normal flow of sewage is intended to be intercepted and delivered into the Little Cuyahoga River, one-half mile below the Howard street bridge, and the increased volume of sewage or storm-water over the capacity of the out-fall sewer—which is already taxed to nearly its full extent with the normal flow—passes on through the storm-water sewer to the river at a point under the Howard street bridge. This main sewer, like all the other main sewers in the city, is of egg-shaped, cross-section, well constructed. The storm-water is taken into the sewers through catch-basins, trapped from the sewers with eight-inch water seals. Man-holes are constructed at all street intersections, and in many places between with perforated covers for ventilation. All junctions with main sewers and local sewers are made with curves with radius not less than 20 feet tangential to center lines, with very carefully-constructed cast-iron inverts and junction points. All local sewers are built of vitrified salt-glazed sewer pipes, with bell and spiggot ends, observation-holes and man-holes at proper distances, and perforated man-hole covers. All man-holes on line of sewers are built of brick.

At the crossing of Main street and Center street a thirty-three-inch-in-diameter brick overflow sewer is built, emptying into the race.

At the crossing of East Market street and the railroads, an overflow 15 inches in diameter is built discharging into the railroad lands.

The system as at present constructed receives the storm water from a district 410 acres in extent, and the sewage of 6,000 people.

In describing the workings of the sewers, it will be necessary to demonstrate by giving the effects which various rainfalls have upon the volume of flow at various points:

Beginning at the summer outfall, as it is called, or the outfall of the normal flow of sewage, and we find from gaugings that the normal flow is 746,323 gallons per diem. The number of the population now using the sewers being 6,000, with an average of 80 gallons per capita per diem, would indicate a flow of 480,000 gallons per diem. This excess, as shown by the gaugings, is due to the spring and subsoil water taken into the brick sewers, it having been impracticable to exclude it. This outfall sewer is connected with the main sewer in Howard street, by an arrangement which delivers to it the full volume of its capacity, the excess flowing on to the storm outfall. In other words, the sewer from the sewage outfall sewer to Howard street bridge, is an overflow sewer for storm water. Whenever the volume is increased by storms or otherwise above 2,000,000 gallons per diem, the excess is delivered at Howard street bridge. The principal cause of complaint as to this overflow, is from its action during very light storms, when the volume in the river is not increased. We readily see from the gaugings that the flow from a storm of less than 1-10 inch per hour, with 40 per cent. of the rain fall reaching the sewers, will start this overoflow into active operation, while the sewage is diluted by the storm water less than three times its volume.

From this point, passing on up the sewers, we find the next point of difficulty between Market and Mill streets. The trouble is here caused by insufficient capacity of the sewer in Howard street, to accommodate the flow of storm water in excessive rains. To illustrate this by figures, an area of 410 acres is tributary to this sewer and provided with catch basins to collect the storm-water. The time consumed in the passage of storm water after entering the sewers at the farthest removed point from the corner of Mill street and Howard street, is ten minutes; assuming a rainfall of one inch per hour, with 35 per cent. of the storm water reaching the sewers, there would be passing along North Howard street sewer, 143 cubic feet per second within fifteen minutes from the commencement of the storm. The capacity of the Howard street sewer is sufficient to carry this amount only, so that any increased volume due to a storm in excess of one inch per hour, will back water into the house connections along that thoroughfare. Two storms very much in excess of that amount, fell during 1887, and the City Engineer has recommended to limit the capacity of the catch basin intakes to the carrying capacity of the sewer, which will probably be done at an early day, providing other channels for the excess volume.

Passing on to the upper laterals of the system, where the most trouble is encountered, we find sewers proportioned to carry storm water laid on light grades, and this on many streets where the normal flow of sewage would be insufficient to properly cleanse a drain 4 inches in diameter. This is one of the inevitable results of a system where the combined flow of storm water and sewage is provided for. The workings of this part of the city's sewers is very unsatisfactory; frequent stoppages occurring from stranded matter accumulating along the sewer, because of the normal flow of sewage being insufficient to carry the solid matter.

In local sewers where grades are light and pipe large enough to carry storm water, which are supplied with a small normal flow of sewage, storms will flush them out, but at the termination of a storm is where the mischief is done. The volume reaching the sewers through the catch basin intakes diminishes, and consequently the depth of flow and velocity are reduced. As the velocity decreases, matter in suspension which was being carried along by the greater velocity, falls to the bottom and forms a very serious impediment to the normal flow of sewage, practically converting the sewer into a long cesspool. A final stoppage is the result, which has to be removed, if possible, by flushing from the hydrant or digging open the sewer. Flushing sewers of large bore from the street hydrant is very unsatisfactory, when sand is the principal deposit to be removed.

The question of proper size and inclination, to be given the house drain from the house to street sewer, is one of great importance in securing a perfect channel for the removal of sewage. Much trouble has been caused from frequent stoppage, due to improper workmanship and materials in these connections, causing the owners much annoyance and expense.

Once cause leading to this state of affairs is negligence in clearing the interior of the pipes of cement, while laying. This could be remedied by compelling the use of oakum or jute gaskets in all joints before cementing. Trouble comes from the careless method of laying curves—straight pipe often being used for that purpose, which spread the outside of joints apart to such an extent as to leave a rough shoulder where fibrous matter accumulates, which, together with grease, soon creates a stoppage which no amount of flushing will remove.

Too much care cannot be exercised in the construction of these house-drains. The size and grade should be such that the depth and velocity of flow will remove all solid matter entering the house-connection and the pipes thus be kept clean and free from all decomposing stranded matter. This result *cannot* be secured by—

1st. A house-drain of eight or ten inches in diameter, when the flow of sewage never reaches the volume necessary to clear one of four inches in diameter.

2d. A house-drain of *any diameter*, laid at an inclination too flat to secure proper velocity to carry in suspension the solid matter entering the drain.

3d. A house-drain of *any size* which is laid with the ribs and clots of cement adhering to the inside, or full of sharp, improperly-constructed turns, and whose interior is covered with broken blisters, which present such obstructions to the flow as will arrest fibrous matter. Such matter constantly accumulates, when once a nucleus is formed to which grease can adhere.

I devote this much space to this particular subject, because of the fact that the average house-owner is uninformed of the necessity of careful supervision in the construction of his house-drain, even did he know *how* it should be done. Cities should provide for the proper inspection of such work during the construction, as protection to the health of the general public. The public welfare imperatively demands that the supervision by the agents of the public should not terminate with the construction and maintenance of the street sewer, but extend to the very extremity of all the intricate connections therewith. The enaction of sanitary laws, with no provision for their enforcement, will not secure the proper compliance therewith. The non-compliance with sanitary regulations arises, not so much from wilfulness, as from lack of knowledge of the house-owner; and city governments would make a much wiser expenditure of the public funds, and render much more service in the maintenance of the public health, by providing proper advice and supervision of the plans and construction of house-connections and plumbing, with power to enforce the regulations at the time of construction, than to delay their intervention until a nuisance is created, the house-owner is arrested, and the expense of a police court trial is had, for the non-compliance with the sanitary regulations.

The city sewage is at present deposited in the Little Cuyahoga river, at a point one-half mile below the crossing of Howard street. The normal flow of sewage is at present about 746,323 gallons per diem, which will probably be increased in the next ten years to 2,000,000 gallons per diem. The Little Cuyahoga river is a stream with a dry-weather flow of 2,000,000 gallons per diem. The stream has a rapid fall, with numerous cascades, over a distance of 1½ miles to its junction with the Cuyahoga river, which stream has a dry-weather flow of 4,000 cubic feet per minute. No provisions have been made for any change in the present method of disposal.

In conclusion, the writer considers that the removal of sewage to a point at a distance from the densely-populated districts by water-carriage, the most cleanly of all methods, when properly effected. This end can best be secured by a system of carefully-constructed and proportioned drains of vitrified earthenware pipes, laid with oakum or jute gaskets and cemented joints, absolutely tight, admitting no subsoil water nor allowing sewage to escape.

In securing this much-to-be-desired end, all storm-water admitted to the sewers should be under absolute control, and no street-water admitted, unless into the main sewers, where the normal flow of sewage is sufficient to cleanse the sewers of increased size during dry weather. At the upper ends of the local sewers, where the normal flow of sewage is insufficient to insure cleanliness, automatic flushing-tanks should be placed to supply the deficiency in volume. Ventilation should be secured by man-holes and observation-holes with perforated covers, placed at from 150 to 200 feet apart in the street, insuring an unlimited supply of fresh air; and we believe that in sewers thus constructed and properly maintained the sewage will be removed before decomposition can take place, sewer-gas generated, or disease germs multiplied.

The most serious objection to sewers proportioned to carry storm-water, is found in the local sewers where the normal flow of sewage is insufficient to cleanse the sewer, owing to its excessive size, and where automatic flushing arrangements cannot be applied satisfactorily at a reasonable expense. Street storm-water should be provided for, where necessary, by short storm-water sewers, and the perfect system of sewage-removal should not be jeopardized by any ideas of mistaken economy in this respect.

HYGIENE AND CARE OF SCHOOL CHILDREN BY THEIR TEACHER,

BY

KATHERINE KURT, M. D.,

Akron, Ohio.

HYGIENE AND CARE OF SCHOOL CHILDREN BY THEIR TEACHER.

BY KATHERINE KURT, M. D., AKRON, OHIO.

[Read before the Sanitary Convention, held under the auspices of the State Board of Health, at Akron, O., January 25th and 26th, 1888.]

Teaching in the public schools is now so systematic, that all rules and regulations, excepting minor ones, enforced in one school are used in all the ward schools.

Each school is a branch of the trunk of public instruction. Every child is required to conform to the same rule of attendance, of learning its lesson, of recitation and deportment.

While in the main this is successful, there is still considerable friction which is often detrimental to the child's welfare, as many parents and most doctors will testify.

As to *direct* physical management, it is the belief of the writer, that not much is to be suggested to the teacher, but rather to the Board of Education.

The Akron school teacher, with few exceptions, is a woman, and hence by nature adapted to the bodily care of children.

In the Broadway building, on wet or rainy days, and these are frequent during school months, all moisture must be dried from shoes and garments in the class room.

Many children coming from families living in one or two rooms, and where cleanliness is not the law of the house, have their woolen wraps charged with a variety of scents not pleasant to the olfactory nerve, if not injurious to the respiratory organs. Bearing in mind, that these odors are greater when the garment is wet or moist, that sometimes the drying must be done twice in a day, that on such days rooms are harder to ventilate, and that from forty to fifty-six or sixty, children are confined to one room, it is not difficult to understand that at the close of day, these children have had their lungs and circulation charged with the effect of foul air. This condition prevails in all buildings in which halls or ante-rooms are not heated, and the teacher is not responsible; she would do better if she could.

It is one of the requirements of the School Board, that teachers shall take special pains to secure neatness in the school rooms, halls and school premises. Another is, that pupils shall be clean and neat in attire while attending school.

Free use is made of the soap, water and towels, supplied for unclean hands and faces.

Much vitiation of school-room atmosphere could be avoided, if strict personal cleanliness could be enforced. Perhaps half the bad air is caused from a want of the bodily bath and clean clothes. Would it be impossible that the teacher require these essentials of personal cleanliness, as much as she now does attendance?

Why not as well send a note to parents on the need of a bath or clean garments, as to inform them when the same child plays truant or misbehaves?

In this heterogeneous gathering, it seems to me a fundamental right of the cleanly-kept child, that the others, while associated in the same room, shall be so conditioned that their persons are free from bad emanations.

Such demands from teachers, might at first meet with resentment, but steady and kind enforcement, would overcome and prove this a general comfort.

BODILY ILLNESS.

While the teacher cannot see with the medically educated eye, yet she should be so good an observer as to detect what very apparently indicates disease, and in all such cases parents should be notified, and if need be, a statement required from a physician before re-admitting the pupil. It is reported by a physician, that a child suffering from chorea was sent to school, and allowed to come by the teacher, who even punished the child for making grimaces as she supposed. I do not see that she deserves censure more than the parents, except that most teachers have better judgment than some parents.

Some one suggests why not create an office of hygienic supervision, which shall be filled by a competent medical person, whose business it shall be to see to the general physical welfare of school children.

SEATS.

There should be more than one size of seats and desks in each room, so as to accommodate the different sized pupils. These should be assigned by the teacher. There is a serious defect in the Broadway school in this respect.

Badly constructed seats are found in the room where children go when first entering school. While the seat here may be right in height it is too narrow; as well seat the pupil on the end of a clap-board.

If these are too small for the entering pupil, what shall be said of the desks in the higher rooms, which are made on the same pattern, only a little larger. Boys and girls of twelve to fourteen years of age, and some nearly full grown, sitting upon these five hours daily for a whole school year! When obliged to bend the body forward in using the desk, with one spot on which to sit, with no lateral space to vary the posture, one need not be surprised to find stoop-shoulders or curved spine in a growing youth thus constrained.

VENTILATION.

In the matter of ventilation, it is not my province to say anything, except that some way should be devised whereby the air may be changed more frequently.

Under the present system of ventilation, where the fresh air is secured through the open window, the plan of letting the pupils march in the room and at the same time opening the windows, is probably the cheapest. By this method and the recess, the air could be wholly changed at least once an hour.

BLACK-BOARDS.

There is too much use made of the black-board in teaching, especially in the grades below the grammar schools. With the beginner it is used almost wholly, and in the grades above about two hours daily.

When we consider that from forty to sixty pupils are under the management of one teacher in one room, and reciting from their seats, and that the half or whole, use the board at one time, it is readily seen that all cannot see equally well. A board of several feet in length, in a good light, has a glare on parts intolerable to the eye, while another part may be too dark. I do not believe it possible, to so arrange the light in a room that a given surface on the wall, be it black or green, can be easily seen from forty to fifty-six or sixty, or only half this number of different points in the room at the same time. It causes a strain upon the eye capable of producing pain in the eye, headache, defective vision and reflex weariness of the system.

The effort of the eye to frequently adjust the accommodation to see the board at a distance, in good light, and the next moment the slate or book fifteen or eighteen inches away, overtaxes any eye young or old.

Too much action of the eye makes it tired, for the same reason that another part of the body gets tired if over used.

The problem as to what should be used instead of the black-board, must be solved by others; but why not put the board work in first, and lay it on the pupil's desk?

If no substitute can be found, then let only a small part use the board at a time, and while so doing sit conveniently near. The teacher may object, that she has not time for so much sectional work, to which we reply, Give her less work or fewer pupils.

PERCENTAGE.

There is too great stress put upon attendance at school. By the pressure that is brought to bear upon children by their teachers, it would seem that her place as a teacher depends upon having good attendance. To parents comes the words, "I must keep up my percentage."

Some how the question of attendance causes great annoyance, and I cannot see why it should. It may be the course of study, though no teacher concedes that it is based upon the brightest mind with the best body. A degree of nervous tension is often brought about, which is not compatible with a healthy mental and physical development. Constant attendance upon school is not good for some children. Such need to vegetate a part of the year.

EXAMINATIONS.

Examinations are a direct burden to children below the High school. Teachers are prepared to judge of a child's qualifications without examination. It puts a degree of anxiety and concern upon children injurious to the whole nervous system. Days before, the cry comes, "Teacher, when will examinations begin?" "If I don't stand well, I'll not pass;" "I'll not be promoted." They think they must study in the evening. They feel themselves put through a trial, out of which they must successfully come, or be disgraced. To be sure many bear the examinations easily, but in the public school all types of natures are found—the anxious, those with slow minds, the quick, the feeble-bodied, the excitable, and the quick and bright, who are the teacher's pride. While all may work, none should be burdened.

STUDY AT NIGHT.

No pupil below the High school should be required to study in the evening. Five days of the week for almost ten months of the year, is sufficient brain-work, without study at night. Books and study should be dismissed with the school-house. It may be said that these grammar pupils spend their evenings in idleness. This may be true, but you know "All work and no play makes Jack a dull boy," and Lizzie a dwarfed woman.

One member of the committee thinks one great want in our schools is more physical exercise. If teachers had fewer pupils, there would be a general improvement. Air would be purer; less routine and more individual work could be done. Instruction could be adapted to the peculiar needs of pupils. In the grammar schools, the one-session is now enforced. Here pupils are kept in the school-room from 9 until 12 o'clock. It seems there should be a mid-time recess. For each day this seems easy enough, but because this is continuous, it might be too confining. Like the pedestrian's race, it is not the great speed with which he travels, but the long time he keeps at it that tells. And here is the secret of over-working, or perhaps wrong-working the pupils. What seems a fair estimate of daily work, at the end of many days proves to have been too much.

No doubt but children could learn all they now do, and retain it better, with no over-taxing, if instruction could be given according to each child's nature.

Morally, I have no criticism or suggestion to give. I believe the association of teacher with pupil is morally wholesome, from morning till evening.

SUPPLEMENT

TO THE

REPORT OF THE OHIO STATE BOARD OF HEALTH,

1887.

NATIONAL CONFERENCE STATE BOARDS OF HEALTH,

Held at Washington, D. C., September 7, 1887.

APPENDIX TO REPORT OF STATE BOARD OF HEALTH.

NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH.

WASHINGTON, D. C., September 7, 1887.

The fourth annual meeting of the Conference of State Boards of Health was held in the parlors of Willard's Hotel, Washington, D. C., September 7, 1887.

The Conference was called to order by the President, Dr. J. N. McCormack, at 9:30 A. M. The Secretary, Dr. Conn, of New Hampshire, being absent, Dr. Lindsley, of Connecticut, was elected Secretary *pro tempore*. The minutes of the last meeting having been published and sent to members, it was, on motion, voted to dispense with reading them.

At the invitation of the President, Dr. Peter H. Bryce, of the Province of Ontario, opened the discussion on the subject of Inter-State Notification of Infectious and Contagious Diseases. He said:

MR. CHAIRMAN: Although not presenting any formal report from the Committee on Inter-State Notification of Diseases I desire, in the name of the Committee, to state that, succeeding the meeting of last year I drew up, as Chairman of said Committee, a form of notification and forwarded it to all State Boards, suggesting its adoption either as made or in some modified form which would fulfil the purposes intended. I have much pleasure in reporting that nearly all the States having commercial relations with Canada, supplied with much regularity throughout the year, reports of cases of infectious diseases, especially, outbreaks of small-pox.

It is somewhat unfortunate that New York State, with so extended and important a sea-board and so many avenues for the entrance of disease from without and for distribution therefrom, should not have fallen in with the resolution of the Conference. From newspaper reports and other sources, I am, and I presume the Conference is aware of there having been a considerable number of cases of small-pox in New York during the year, and further, that the Conference has had no knowledge of where they were located, of their origin or their relationships.

The advantages of a like form of notification and its general approval and adoption is apparent to everyone, since we are enabled thus in some degree to connect cases when *nature*, *residence*, *nationality*, *where exposed*, etc., have been indicated in the form of notification. Indeed, except for information regarding number of outbreaks, and thereby supplying to other States some estimate of the prevalence of the disease, and for enabling the signatory States to investigate outbreaks along certain lines of communication, or to explain the outbreak of cases of otherwise mysterious origin, all will agree, that with the present limited inter-state means for co-operative work, any notification will have but little practical value.

Regarding the question of notification of diseases other than small-pox, cholera and yellow fever, it is a matter for the Conference to consider whether any practical necessity exists therefor, and whether any satisfactory method for carrying it out can be elaborated.

I thank the Conference for its indulgence in listening to my remarks.

Dr. Baker said he had not employed a specially-prepared blank because of the greater expense and trouble, and a belief that his weekly bulletin, especially when a marked copy was sent, would be accepted as sufficient. If it was not satisfactory he would be glad to know it.

In reply to Dr. Rauch, he said that, in his opinion, the mortality statistics prove that small-pox is of small consequence compared with scarlet fever or diphtheria, and he suggested the question whether the same principle of notification should not apply to each of these diseases which involve greater danger.

Dr. Rauch objected that such notification often lost its value by the slowness of transmission. The facilities for rapid traveling sometimes required the most prompt information of danger to prevent the transmission of infection, and instanced the ease with which small-pox can be conveyed from one State to another.

Dr. Baker rejoined, saying that in his opinion, small-pox was an unimportant disease as compared with scarlet fever and diphtheria. That, as a matter of fact, they were far more dangerous and fatal than small-pox, and, therefore, their restriction was deserving of more attention.

Dr. Lindsley, of Tennessee, thought Dr. Baker's point was well taken. A case of small-pox in Maine was of no consequence to the people in Tennessee. He did not think it necessary to notify every State in the Union of each case of small-pox, but the matter was quite different in regard to yellow fever or cholera. He believed the occurrence of either of these diseases ought to be published widely.

After Dr. J. B. Lindsley had spoken, Dr. Baker urged the value to families, about to travel or locate, of information relative to the presence of scarlet fever or diphtheria in places which it was intended to visit, saying, if the places where these diseases are present are published, the information is sometimes useful in preventing the taking of children directly into danger. He would be glad to be able to inform citizens of Michigan as to the presence or absence of these really dangerous diseases not only in places in Michigan, as is now done by means of a weekly bulletin, but also relative to important places in other States. On lines of travel where inter-communication is constant and rapid, telegraphic reports, he thought, might sometimes be useful, even between places as distant as New York and Michigan.

Dr. Rauch said, the idea of inter-state notification originated in the discussion of the means of preventing the spread of yellow fever. In regard to such notification concerning diphtheria and scarlet fever, he believed it to be impracticable.

Dr. E. M. Hunt, of New Jersey, believed the importance of inter-state notification depended largely upon the prevalence of a given disease. Any disease prevailing as a wide-spread and destructive epidemic deserved notification.

Dr. F. F. Gary, of South Carolina, spoke of the importance of notification as relative chiefly to yellow fever, cholera, etc. He did not regard it necessary in those diseases that are prevalent in some portion of the country all the year round, such as diphtheria, etc.

Dr. Benjamin Lee, Secretary of the State Board of Health, of Pennsylvania, considered that it would be a grave error to omit small-pox from the list of diseases for which inter-state notification is required. The ease with which it could be conveyed in personal effects, and its extreme malignity, made it in his eyes one of the most important to circumscribe and to be on the alert against its invasion. With reference to the solemn compact to notify all the other State Boards, he confessed that he had understood it to apply only to contiguous States or those in direct line of communication, and he had felt that he was doing his full duty under the agreement in notifying the Secretaries of the six States bordering on Pennsylvania, and the province of Montreal, which is in direct water communication with it. He had during the past year sent notice of the occurrence of twelve cases or outbreaks of the disease in question within the limits of his State, and had received similar information of seven in other States.

Dr. C O. Probst, of Ohio, said, that it was in some degree impossible for him to give very prompt notification of diseases occurring in his State, as he was mainly dependent upon information given by voluntary correspondents. A number of these had been secured who furnished weekly reports of prevailing diseases. Cases of small-pox occurring in places provided with Health Officers were promptly reported, and notice of these had been sent to other States by telegram or letter. A weekly health-bulletin was issued, based on reports from correspondents, and this had been used in one or two instances as a means of inter-state notification. He understood that such notification was only to be made to contiguous States.

Dr. Fisher, of Rhode Island, said, that there could be no question as to the value of inter-state notification, and especially from adjoining States, of the occurrence of small-pox, yellow fever and cholera. The facilities of travel and the demands of business were such, that the intercourse with cities and large towns in other States, was almost as frequent as between adjoining villages in some of the country towns of the same State. During the past year he had received, with much satisfaction, such notification from adjoining States, and from more distant localities, and had in turn given similar notice of a case of small-pox in Rhode Island. He thought it very important that the origin of each case should be given if possible of ascertainment, because, sometimes the locality of origin was nearer at hand than the locality of the notified case or cases, and the place of origin needed quite as much, or perhaps more attention than the location of the known disease, inasmuch as the disease might still be lurking in a modified form, or in concealment in the place of origin.

Dr. Reeve, of Wisconsin, said: It seems to me that the extent and exact nature of the agreement supposed to have been entered into with reference to the inter-state notification of contagious diseases is not well understood, and that the practice of States under this resolution is so far from being either uniform or thorough as to be of little practical value at present.

My own understanding of the spirit and scope of this resolution was, that I should promptly notify the executive officers in each of the group of States that are contiguous to the one that I represent whenever any of the diseases specified in the agreement should appear in my own State, and my practice has been in accordance with this understanding. I have not understood that it was incumbent on me to notify the officers of distant States. I do not know that this is the general understanding, or in fact that there is a general understanding in regard to the matter. In some instances I have received notice from the executive officers of the Boards of Health of States adjacent to my own, and in other instances I have first learned of the existence of contagious disease in States near me only through the public press. On the other hand I have received such notification from very distant States; Maine in particular has sent such notices to me, and while I am glad of course to know from official sources what diseases are prevalent or existent in such distant States, the information has in it but little that is likely to be of practical value to us if similar reports do not come from intermediate States much nearer to us, and in very much closer connection with us by lines of public travel.

I think that we need a much clearer definition than we now have of what is expected of us, and what is obligatory upon us under the resolution under discussion.

Dr. J. Berrien Lindsley, of Tennessee, said, that as a practical matter the inter-state notification of infectious diseases as agreed upon at Toronto last year, was of prime importance. The fidelity with which this compact was carried out by the State Board of Health of Louisiana, had relieved the inter-states of the Mississippi Valley of the dread formerly prevailing that yellow fever would slip in unawares through New Orleans.

He agreed, however, with Dr. Baker, that the agreement needed modification. The Union and Dominion combined embrace over six million square miles, and about sixty-five million of people. For so vast a region the compact should admit of some elasticity. A case of small-pox in Maine would not be of moment to Tennessee, but it would to Quebec; small-pox in New Orleans would concern Tennessee but not Maine or Ontario. Cholera at New Orleans or Quebec would concern the entire region embraced in the compact. It should be so modified as to accomplish the great good intended, and yet not be needlessly burdensome.

At the conclusion of the above remarks, Dr. Hunt, of New Jersey, offered the following resolution:

Resolved, That in the judgment of this Conference there should be notification of adjacent States or those in close travel communication in all cases of small-pox, cholera yellow fever and typhus fever.

Resolved, That in case of diphtheria, scarlet fever and typhoid fever there should be notification of adjacent States when the outbreak is near the border of the adjacent State.

Resolved, That uniformity of blank is desirable.

The resolution was not put to vote, but was referred, together with the whole subject to the Committee on Inter-State Notification.

On motion of Dr. Bryce, it was voted that the Committee have power to add to their number, and that they report at the meeting on the following morning.

The following report of the Secretary, Dr. Conn, of New Hampshire, was then called for and read:

SECRETARY'S REPORT.

Mr. President: Being unable to meet with the Conference this year, permit me to submit through you my reports as Secretary and Treasurer.

The Treasurer's report herewith enclosed shows the amounts paid in and disbursed; and is accompanied by a check for the small balance remaining in my hands, payable to your order.

From the list of payments it will be seen that of the twenty-one States represented at our last meeting in Toronto, fifteen Boards have remitted the amount of the assessment which was voted at that meeting, and as Indiana generously published our proceedings and allowed an opportunity for us to obtain reprints at a very low rate it would seem but an act of justice to include her Board in the list of those having paid their dues

Iowa, Maryland, Minnesota, New Jersey and New York, as well as all the Provincial Boards failed to respond or send any report. While Alabama, North Carolina, Missouri and Kansas, that were unrepresented at Toronto, were among the first to send in their assessment.

Several States having nominal organizations to represent Health Boards responded, and expressed a desire to be included in this great National work, but on account of being destitute of funds, which is absolutely necessary to develop any sanitary work, they are obliged to remain outside the organization. In view of the fact that some of these Boards have representative sanitarians on their list of members, men whose names are honored by all friends of State Medicine, and who are struggling on in the firm hope of eventually securing recognition from the public to that extent necessary to cause them to demand the financial support adequate to sustain an active, working organization, I would suggest that our Committee on Organization and By-Laws take into consideration the situation of these Boards, and, if thought best, allow them an honorary position until such period as they may secure the funds necessary to become active workers.

Such a recognition of their gratuitous services to the people of their States might have its influence in creating that sentiment which in time will give them the means of more fully developing their organizations.

No report has been received from either the Dominion or Provincial Health authorities, although circulars and programmes have been sent to them the same as to the several States, nor has any reply been elicited whether any delegates would be appointed to attend the meeting in Washington. Rhode Island, Ohio, Michigan, Wisconsin, Iowa, Pennsylvania, Kentucky, Tennessee and North Carolina have appointed delegates. Other State Boards may have done the same, but if so, I have not been informed of the fact.

I have prepared a roll-call of the States for the use of the Conference, which I herewith append.

The programme may seem short and unimportant, yet it contains all that was submitted to your Secretary, and the circular asking for "questions or suggestions" was sent out early in the season.

It is with great sorrow—which I know you will all share with me—that I am obliged to report the death of one of our most esteemed co-workers at our meetings in Washington and Toronto, Dr. E. W. Germer, of Pennsylvania. No words of mine are needed to bring before your minds the noble man that he was, and the steadfast earnestness and honesty of purpose with which he was wont to state his position on sanitary matters.

He was a sanitary host in himself who never shirked any responsibility that came before him. He was outspoken, without being vindictive; fearless, yet not rash; determined, yet gentle in his demeanor; detesting all shams and pretences, he was genial and sociable in his nature, and we shall all miss his earnest zeal in the support of every sanitary measure which may promise to secure to mankind increased immunity from preventable disease.

Pennsylvania has lost a strong sanitary advocate, his adopted city a faithful local Health Officer, whose place they will find it hard to fill, while in his death the National Conference of Health Boards has lost a zealous co-worker, and a warm-hearted sympathizer in all our labors. Let us ever hold in grateful remembrance his many good qualities, and bear an affectionate testimony to his genius, his affability and great love for the principles of State Medicine.

No communications have been received regarding the unfinished business of last session, nor any suggestions in reference to the proposed permanent organization.

Regretting very much my inability to be with you in Washington, I sincerely thank you for the honor you have conferred upon me in being elected to the office of Secretary. All of which is respectfully submitted.

GRANVILLE P. CONN, M. D., *Secretary.*

CONCORD, September 3, 1887.

On motion the report was by vote accepted and ordered to be printed with the proceedings.

By direction of the President, the roll-call of the States was read by the Secretary *pro tem.* and responded to by the following delegates:

Alabama.
Arkansas.
California.
Colorado.
Connecticut, Dr. R. S. Goodwin, Dr. C. A. Lindsley.
Delaware.
Florida.
Georgia.
Illinois, Dr. J. H. Rauch, Dr. Wm. R. Mackenzie.
Indiana, Dr. Charles N. Metcalf.
Iowa.
Kansas, Dr. W. L. Schenck, Dr. D. Surber.
Kentucky, Dr. J. N. McCormack, Dr. J. O. McReynolds.
Louisiana.
Maine, Dr. A. G. Young.
Maryland.
Massachusetts.
Michigan, Dr. Henry B. Baker, Dr. A. Hazelwood.
Minnesota.
Mississippi.
Missouri.
New Hampshire.
New Jersey, Dr. E. M. Hunt.
New York.
North Carolina, Dr. J. W. Jones.
Ohio, Dr. C. O. Probst, Dr. H. J. Sharp.
Pennsylvania, Dr. Benj. Lee.
Rhode Island, Dr. C. H. Fisher.
South Carolina, Dr. F. F. Gary, Dr. J. R. Bratton.
Tennessee, Dr. J. Berrien Lindsley.
Texas.
Virginia.
Vermont, Dr. C. L. Allen.
West Virginia.
Wisconsin, Dr. J. T. Reeve.
District of Columbia.
Dominion of Canada.
Province of Ontario, Dr. Peter H. Bryce, Dr. F. Rae.
Province of Quebec.
Manitoba.
Dakota Territory, Dr. J. B. Van Velsor.

Dr. W. L. Schenck, of Kansas, announced the death of Dr. D. W. Stormont, of that State.

Dr. J. H. Rauch, of Illinois, moved and it was voted, that the President appoint a committee to draft suitable resolutions, relating to the decease of Dr. E. W. Germer and Dr. D. W. Stormont, and submit them to the meeting of the Conference on the following day.

The President named as such committee Drs. Rauch, of Illinois, Lindsley, of Tennessee, Schenck, of Kansas, and Lee, of Pennsylvania.

On motion of Dr. C. N. Metcalf, of Indiana, it was voted that the President be requested to send by telegraph, an expression of sympathy, on behalf of the Conference, to Dr. T. F. Wood, of North Carolina, he being confined at home with a dangerous illness.

On motion, it was voted to adjourn until the next day at 9 A. M. at the same place.

ADJOURNED MEETING.—Thursday, September 8.

Pursuant to adjournment the meeting of the Conference was called to order by the President at 9:10 A. M., in the parlors of the Willard House.

The minutes of the previous meeting were read and approved.

The first business taken up was the consideration of the following questions:

1. Does your State Board of Health receive from every part of its State prompt notification of the occurrence of diphtheria, scarlet fever, typhoid fever, and small-pox?
2. If such prompt notification is received, does your State send an expert to each locality where a case occurs?
3. Just what is done by your State Board on receiving a notice of diphtheria, scarlet fever, typhoid fever or small-pox?

The President announced that he would call for responses to the above questions, by States, calling them in alphabetical order.

On motion of Dr. Baker, of Michigan, it was voted that the delegates be restricted to eight minutes each, in their replies to the above interrogations.

Responses from the following States were made by their respective delegates as follows:

Connecticut—Dr C. A. Lindsley, Secretary of the State Board, said: In order to appreciate properly the answers which Connecticut is obliged to give to such questions, it is necessary to understand the relation of the State Board of Health to the people of her commonwealth and to the local Boards of the State. The State Board is only an advisory Board. It has no mandatory powers. As a Board of Health its functions lie chiefly in the line of investigations of the causes of disease, and especially of epidemics when they may prevail; in giving counsel and moral support to local Boards in their efforts to improve their sanitary condition, and in striving to awaken an interest in sanitary science, and diffuse a knowledge of the principles of public hygiene among the people.

In addition to this, the State Board is charged with the superintendence of the registration and compilation of the vital statistics of the State.

This latter duty consumes not only a large part of the time of the Secretary of the Board, but also a greater part of the appropriation made by the State for its expenses.

In view of these facts, the reply to the first question must necessarily be in the negative.

The State Board does not receive prompt notification of the occurrence of the diseases mentioned from each locality. It will be readily understood that if the communication of such information is a voluntary matter, a prompt and general practice of giving it is not to be expected.

The answer to the second question is implied in that of the first. But I am ready to affirm that if notification of those diseases were made to the Board an expert would not be sent, certainly not to each locality where a case occurred. I desire to ask my friend, Dr. Baker, the Secretary of the State Board of Michigan, if, upon being notified of a case of typhoid fever in Detroit, he would think it necessary to send an expert there to take charge of it. In the towns of Connecticut. I should fear the resident physicians would resent such a proceeding as unwarrantable impertinence, and one not to be thought of except under very extraordinary circumstances. Besides this, even in the small State of Connecticut, without the prevalence of any severe epidemic, the cases of these diseases are numerous enough, all the time, to give active employment to a pretty large body of experts, if one was sent to each case.

It does not appear to me to be possible that any State Board can give an affirmative answer to that question.

To the third question, the Connecticut State Board can answer, that while it does not receive prompt notification of all cases of these diseases, it does frequently receive through various channels, information of any unusual prevalence of them

That the State Board has published and keeps on hand a supply of circulars relating to the prevention and restriction of each of these diseases, and whenever informed of an outbreak in any locality, immediately sends to the informant, or to the local Health Board, an ample supply of such circulars for distribution.

And further; if anything is known which would seem to demand it, or if requested, the Secretary of the Board personally visits the locality investigates the sanitary conditions, and offers the best advice he can.

ILLINOIS.—Dr. Rauch, Secretary of State Board said his State answered in general in the negative. He seldom found it necessary to send an expert, but generally depended upon sending circulars to the places where these diseases appeared.

INDIANA.—Dr. Metcalf, Secretary of the State Board, said, his Board did not get immediate information of the existence of the diseases named. Very often the first knowledge of them was obtained from the newspapers; if inquiry verified the papers, he sent circulars, and in exceptional cases made personal visits.

KENTUCKY.—Dr. J. N. McCormack, Secretary of State Board, said: We do not always receive prompt notification of an outbreak of the diseases named, except it be of small-pox. Reports in regard to the other diseases are only made at regular intervals, unless they assume alarming proportions or threaten to pass out of the jurisdiction or beyond the control of the local authorities. We do not send experts unless requested to do so by the local authorities or in cases where such authorities fail or refuse to act. The legislative act creating our Board was evidently framed with the idea that the Board should act mainly as a central bureau for the collection and dissemination of information from and to the local authorities and people, and was only expected to exercise the extraordinary powers given it in such emergencies and epidemics as can not be successfully managed by the county and city Boards. Any other method would do violence to the system of Government in our State, and would be likely to engender such jealousies and hostilities between the local Boards and the State Board as would more than counterbalance the good results from such interference.

KANSAS.—Dr. W. L. Schenck said legal provision is made for the notification of infectious diseases, and it is reasonably general and prompt. Our Board does not send experts to cases unless some special necessity exists, and in each case we do whatever the outbreak seems to demand.

MAINE.—Dr. A. G. Young, Seretary of the State Board of Health, said:

Our new law, making it compulsory upon every town to have a Board of Health, has but recently gone into operation, and a few towns have not been heard from. Our law provides for the reporting of all these contagious diseases to the local Board, and through the executive officer of the local Board to the State Board. I think the new Boards generally are trying to do their duty, and have made a good beginning. The most of these outbreaks of infectious diseases, I think, are reported. With this explanation I would answer that we do not receive prompt notification from *all* parts of the State.

In the one case of small pox which has occurred during the year the Secretary of the State Board immediately visited the locality and found that the newly-appointed Health Officer had promptly recognized the case and as promptly quarantined it. With the other diseases the sending of any expert to every case would be impracticable.

It is the endeavor of the State Board to keep the local Boards supplied with circulars, for popular distribution, giving the proper preventive measures for these four diseases, and also the following blanks: One for the use of physicians and householders, on which notification may be made to the local Boards; one on which the Secretary of the local Board or the Health Officer may notify the State Board; a third for a weekly report to the State Board during the prevalence of these diseases or any one of them; and a fourth blank on which the local Board is required to make a special final report. The last three are in form much like those in use in Michigan. The notification usually gives important data from which to judge of the character of the local preventive work and often says that the house is placarded. The State Board immediately sends a supply of preventive disease circulars, and a brief one on disinfection, and gives usually by letter such further directions as may be thought necessary.

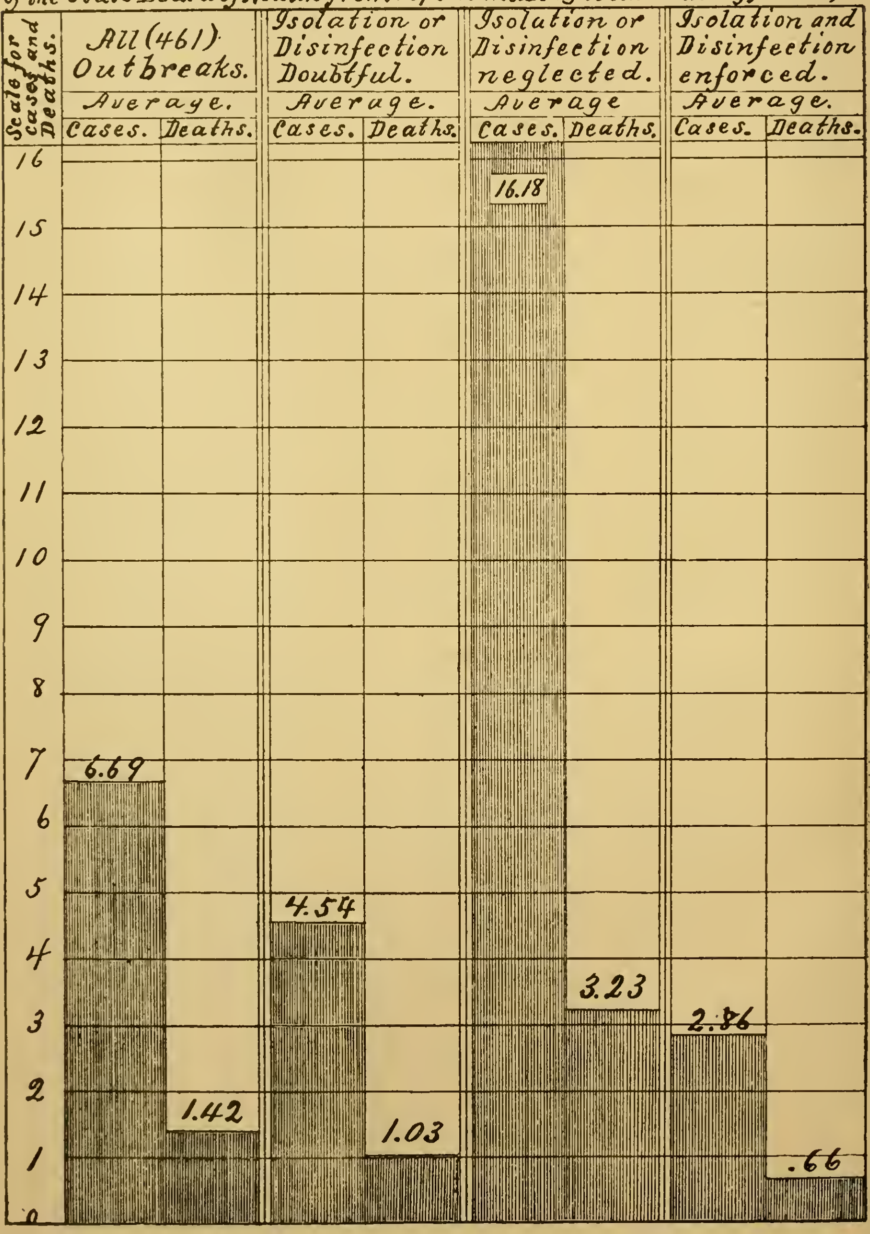
Dr. Baker, Secretary of State Board of Michigan, said, in answer to the question:

(1.) As a rule the Michigan Board does receive from every part of the State prompt notice of the occurrence of small-pox, scarlet fever, and diphtheria, and reports of the occurrence of typhoid fever are beginning to be generally received; the proportion of such occurrences reported is somewhat in proportion to the time during which the State Board has been laboring to educate the people relative to each disease; next to small-pox the first disease brought to the notice of the citizens of Michigan was scarlet fever, and it is now generally known in Michigan that this is a disease dangerous to the public health and must be reported; next, diphtheria was taken up, and more recently typhoid fever.

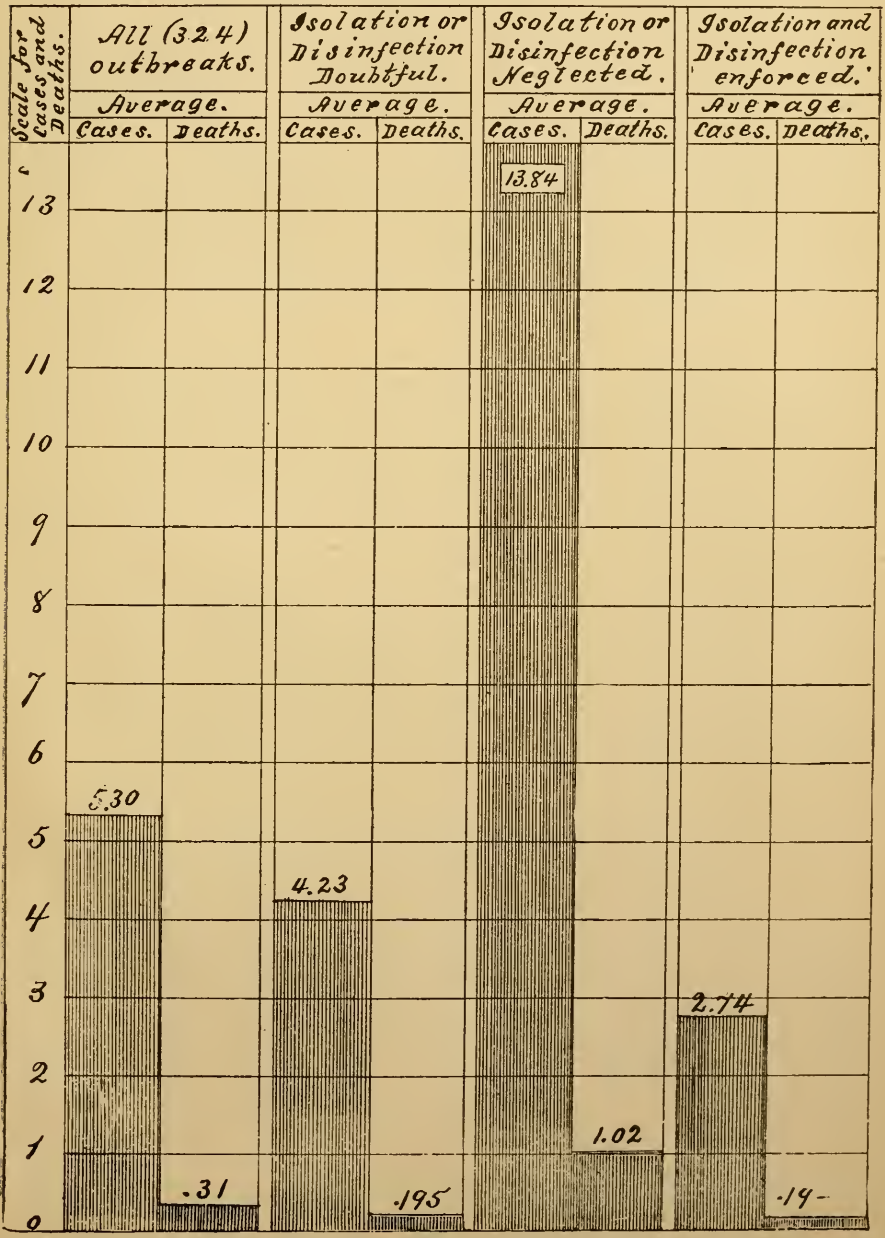
(2.) The Michigan Board does not generally send an expert to a locality where a dangerous disease occurs. [This subject Dr. Baker dwels upon in his paper on the "New Means of Prevention," etc.]

(3.) On receiving notice of a case of diphtheria, scarlet fever, typhoid fever or small-pox the information is at once recorded in a book specially prepared for each of these diseases, showing at a glance several facts which aid in obtaining further information and in compiling the data at the close of the year. Pamphlets containing concise instructions how to restrict that particular disease are immediately sent to the Health Officer with a request that he distribute to the *neighbors* of the families in which the sickness is, because it is believed that they will be most likely to read them at such times and to guard their own families from the danger. The idea of danger *from* neighbors is then readily accepted, and the idea of danger *to* neighbors is afterwards in some cases more easily accepted than if that idea were first presented. The Health Officer is urged to stamp out the disease; to isolate, disinfect, and report weekly the status; and after the disease is over a final report is required stating the number of cases, number of deaths, kind and amount of disinfectants used, and other methods employed. At the office of the State Board all such information is tabulated and published in the annual report of the Board. An effort is made to utilize such information as soon and thoroughly as possible. For instance, I show you a diagram which exhibits at a glance on a single page the results of the action of the health authorities throughout the State, during the year 1886, relative to the spread of diphtheria. It shows that in the 461 outbreaks the average number of cases was 6.69 and the deaths 1.42 to each outbreak; that in the 116 outbreaks in which isolation and disinfection were enforced the averages were: Cases, 2 86; deaths, .66, while in the 102 outbreaks in which either isolation or disinfection was neglected the cases and the deaths were about five times as many, namely: Cases, 16.18; deaths, 3.23. A similar diagram shows the results of action to restrict scarlet fever. The differences, however, are not so great as in diphtheria. One of these leaflets, giving the combined expression of all the health officers relative to a given disease, is sent to a Health Officer who reports the presence of one of these diseases, and can not fail, I think, to supply stimulus for more effective efforts for isolation and disinfection.

Diphtheria in Michigan in 1886, exhibiting the Average Numbers of Cases and Deaths per outbreak:- (1) in All the 461 outbreaks Reported, (2) in the 243 outbreaks in which it is Doubtful whether or not Disinfection or Isolation were secured, (3) in the 102 outbreaks in which Isolation or Disinfection or both were neglected, and (4) in the 116 outbreaks in which Isolation and Disinfection were both enforced. (Compiled in the office of the Secretary of the State Board of Health from reports made by local health officers.)



Scarlet fever in Michigan in 1886: The Average Numbers of Cases and Deaths per outbreak:-1, in all the 324 outbreaks reported; 2, in the 221 outbreaks in which it is doubtful whether or not Disinfection or Isolation were secured; 3, in the 45 outbreaks in which Isolation or Disinfection or both were neglected; and 4, in the 58 outbreaks in which Isolation and Disinfection were both enforced. (Compiled in the office of the Secretary of the State Board of Health from reports made by local health officers.)



Dr. Hunt, of New Jersey, said: We do not receive prompt notification of the occurrence of all cases of infectious diseases. Our great effort is to make the local Boards feel the responsibility of the care of these outbreaks and get them to act. In cases of serious epidemics we send experts if the circumstances seem to require it

Dr. T. F. Wood, Secretary of the State Board of North Carolina, was detained by illness from attendance upon the conference, but in response to the questions under consideration, sent the following communication to the Secretary:

WILMINGTON, Sept. 13, 1887.

Dr. C. A. Lindsley, Secretary of Conference, New Haven, Conn.:

DEAR SIR:—In reply to the questions on circular referred to me by Dr. Jones, would say that this Board does not receive prompt notification of contagious diseases, there being no requirements for such notification except through the regular monthly reports. When the pecuniary condition of our Board will permit such prompt notification will be required, and an expert will be sent to inquire into its cause, etc., but at present this is impossible. Nothing is done on receiving notice of these diseases, this being left to the Superintendent of Health of the different counties. However, should an epidemic threaten, the contingent fund of $2,000 provided by the State, would become available and would be used. Am sorry not to have been able to attend the conference. Yours, very truly,

THOMAS F. WOOD, M. D.,
Secretary.

OHIO.—Dr. Probst said: No; prompt notification is not received from every part of the State. The law makes it the duty of physicians to report such cases promptly to local Health Officers, who, in turn, are required to report to the State Board of Health. In places not provided with Health Officers it is the duty of physicians to report direct to the State Board. There is no penalty attached in either case for a violation of the law, and reports are not generally made. About three hundred physicians act as regular correspondents of the Board, reports being sent in on blanks furnished by us. Of the entire number, however, only about seventy-five report each week. Experts, as a rule, are not sent to investigate outbreaks of these diseases. Members of the Board have made investigations in three instances. As to what is done on the report of such cases, the following blanks are sent to physicians on the report of cases of diphtheria, scarlet fever, or typhoid fever, while circulars relating to these diseases are usually sent to the family, the physician, or to some public official for distribution.

COLUMBUS, OHIO.

DEAR DOCTOR: I find you have reported for the week ending..............................
....cases of diphtheria.
....cases of scarlet fever.
....cases of typhoid fever.

We desire to collect all the facts possible relating to outbreaks of dangerous communicable diseases, and you will confer a great favor on the Board by answering the questions on the inclosed blanks.

We send you a blank for *each case* reported, and you will please number them—1, 2, 3, etc., in your answers.

At the end of the year it is expected such reports will enable us to collate valuable data concerning the origin, mode of communication, etc., of contagious diseases. These will be used in our annual report, where due credit will be given to all who have aided in their collection.

Please inform me if the circular issued by the Board regarding the restriction and prevention of this disease would be of use, and to whom we could send copies for distribution.

Yours, very respectfully,
C. O. PROBST, M. D., *Secretary.*

DIPHTHERIA.

CASE No..............................

1. Where does the patient reside?
2. Are there other cases of diphtheria in the same house?
   How many?
3. Are there other cases in the neighborhood?
   About how many?
4. Has a case of diphtheria ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the exposure of this case to other cases of diphtheria, or bearing on its origin?
6. What is the sanitary condition of the house and surroundings?
7. What measures were used to prevent the spread of the disease? (Isolation, disinfection, quarantine of members of the family, private funeral in case of death, etc.)
8. What success in restricting the disease attended these measures?
9. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

Residence.
Date.
Name.

TYPHOID FEVER.

CASE No..............................

1. Where does the patient reside?
2. Are there other cases of this disease in the same house?
   How many?
3. Are there other cases in the neighborhood?
   About how many?
4. Has a case of typhoid fever ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the origin of this case:
6. Whence is the drinking water, used by the patient, obtained?
7. Is this water liable to contamination from any privy-vault, cess-pool or other source?
8. Were the stools of the patient disinfected, and how?
9. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

Residence.
Date.
Name.

SCARLET FEVER.

CASE No.............................

1. Where does the patient reside?
2. Are there other cases of this disease in the same house?
   How many?
3. Are there other cases in the neighborhood?
   About how many?
4. Has a case of scarlet fever ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the exposure of this person to other cases of scarlet fever, or bearing on its origin.
6. What measures were used to prevent the spread of the disease? (Isolation, disinfection, quarantine of members of the family, private funeral in case of death, etc.)
7. What success in restricting the disease attended these measures?
8. Please give any other facts known of interest in determining the origin of this case, or manner of spreading the disease.

Residence.
Date.
Name.

Dr. Lee, of Pennsylvania, in reply to the first question, said he was compelled to answer in the negative Pennsylvania, he regretted to say, was still entirely without a thorough system of sanitary organization. The first intelligence received by the Board was usually through the public press, although it occasionally happened that the local authorities—as for instance, the burgesses of a borough—would make early application for the assistance of the Board, or that an intelligent physician would rise to the emergency of the occasion and send prompt notice. The Board made strenuous efforts during the past winter to obtain the passage of a law which would have made prompt notification from every nook and corner of the State entirely feasible. This contemplated the appointment by the State Board of a Health Officer in every township. These Officers, acting conjointly with a County Health Officer, were to form a Board of Health for each county. But all were to be directly responsible to the State Board. The plan appeared simple and thoroughly practical, but the Legislature failed to appreciate its necessity. In the absence of any such legal provision the Board had soon after its organization divided the State into inspection districts, of which there were fifteen, each including about four counties. On receiving, whether through the public press or whatever medium, intelligence of the unusual prevalence of a contagious disease the Inspector of a district was immediately notified by telegram or mail, as the urgency of the case appeared to demand, to proceed to the point, investigate the truth of the rumors, and report to the Secretary. If the report was such as to warrant stringent measures, the Secretary conferred upon the Inspector full power of isolation, quarantine, and disinfection for this particular outbreak; and if, in the judgment of the Inspector, the case demanded it, the Secretary himself proceeded to the place and assumed the direction of the precautionary measures. He ab stained from interference, however, wherever it was possible, believing it better for people to manage their own affairs. In fact, he had found that the rural populaton, acting through local authorities, either the Directors of the Poor or some of the Township officers, had a rough and ready way of their own of dealing with small-pox. He could not find a shadow of statutory authority for it, and yet they did not hesitate to declare and enforce quarantine in the strictest manner. He found the local authorities, however, always glad to receive the advice and co-operation of the Central Board. His custom, in reference to the important matter of educating the people by means of circulars, was to give each circular a free distribution at the time of its issue, acting through local Boards of Health, civil or borough authorities, and Boards of Education. The last named instrumentality he considered a very important one, especially when information was to be imparted in reference to the diseases of childhood. After this first distribution circulars were reserved for emergencies and placed where they would do the most good.

Dr. C. H. Fisher, Secretary of the State Board of Rhode Island, said that it was hardly possible for the small-pox to get large prevalence in Rhode Island, because of the large proportion of the citizens who were protected by vaccination. The statutes required every town to provide gratuitous vaccination every year for all persons, and all children entering the public schools for the first time, or from abroad, were required to show a certificate from a reputable physician that the individual had been successfully vaccinated as a protection from small-pox. Prompt notification had been given the State Board of the existence of small-pox, and town and city Health Officers had been of late years equally prompt in measures for restriction and prevention. All the town Health Officers have mandatory powers by authority of the statutes, for immediate action upon the occurrence of cases of small-pox, cholera, or yellow fever, or other circumstances greatly endangering the public health. Notice is not given the State Board, by requirement of law, of the prevalence of diphtheria or scarlet fever, but is given voluntarily, or when advice is sought or opinions desired in regard to cause and methods of restriction. In point of fact, notice is usually given in cases of epidemic prevalence of all diseases. Ordinances exist in most of the towns requiring the exclusion of children residing in houses where contagious disease prevails from attendance at school, and the closing of the schools by order of the Health Officers, when deemed expedient, during epedemic prevalence of contagious diseases.

South Carolina.—Dr. F. F. Gary said that the State Board did not receive prompt notification of all the infectious diseases occurring in the State, and did not usually send experts when it was notified. In extraordinary cases investigation was made of the facts by some member of the Board and circulars were distributed containing the latest and best advice as to "What to Do" when such diseases prevail and how to prevent this spread.

Tennessee.—Dr. J. B. Lindsley, Secretary of the State Board, said his Board must reply in the negative in regard to receiving prompt notification and sending reports. But when informed of the prevalence of infectious diseases in special localities much dependence was placed upon sending appropriate circulars containing the necessary information for the guidance of local authorities and the friends.

Vermont.—Dr. C. L. Allen said: In each township in the State of Vermont there exists a body of men, termed *selectmen*, consisting of three or five, to whom the gen eral interests of each township are intrusted. These are, in reality, local Boards of Health. They are clothed with authority to act whenever small-pox or any contagious or infectious disease may exist in the community. They have power to abate nuisances, and to make any regulations they see fit in regard to the removal or prevention of the causes of disease, or that may have an influence upon public health. These duties, however, have almost universally been neglected. The selectmen have usually confined their actions to the financial and other material, but less important interests of their respective townships.

At its last session, the State Legislature created a State Board of Health, entrusting to it certain duties, but clothing it with no authority. This Board has been organized but a few months. The first official act was to issue a circular to the selectmen, calling attention to their duties in regard to the public health. And it is gratifying to see that some impression has been made. A certain number are asking for more definite and detailed directions as to the regulations which they ought to make. And it is to be hoped that when we get into good running order, the selectmen, the real local Boards of Health, will act in concert with the State Board, and send in promptly information as to the condition of public health in all parts of the State.

I make these preliminary remarks that the National Conference may understand the reason why the Vermont Board has, as yet, never received notice of the existence of contagious diseases in any part of the State. Hence, of course, we have never had occasion to send anyone to investigate such cases.

I may state, however, that if I should hear, directly, or otherwise, that small-pox, scarlatina, diphtheria, measles or typhoid fever was extensively or severely prevailing in any locality, I should consider it my duty to visit that place at once for the purpose of advising with the selectmen.

Upon the question of the receipt of prompt notification of the occurrence of diphtheria and other specified diseases, and as to just what is done by each State Board of Health on receiving notice of the existence of one of such specified diseases, Dr. J. T. Reeve, of Wisconsin, said:

Wisconsin has an organization such as is necessary to secure the notification of contagious disease in the manner contemplated in this question. Under our laws a local Board of Health must be organized in every town, village and city in the State; all physicians must report to the local Boards which have jurisdiction of the places in which such diseases exist, all cases of three of the diseases named in this inquiry, namely: Diptheria, Small-pox and Scarlet Fever; and the local Boards must in their turn report to the State Board. Typhoid Fever is not specificably mentioned in the law as one of the diseases to be reported, but the State Board of Health has power to add to the list any disease that it may by resolution declare to be dangerous and contagious.

Our machinery for obtaining reports is therefore good, and practically, I believe we are notified of the occurrence of these diseases in a large proportion of instances. A question that we frequently ask of local Health Boards is whether physicians are prompt in giving notice of the appearance of such diseases as the law requires, and the answer to this question is generally such as to make us feel that good, and progressively good—though in many cases far from perfect—work is being done in this direction.

With reference to sending experts to localities where such diseases exist, it would, as a rule, be wholly impracticable so to do, often unnecessary, and probably often unwise. When, however, circumstances have seemed to require it, the secretary, or some member of the Board, has visited the infected locality and, with the local authorities has investigated the causes of the origin or continuance of the disease, and has advised as to the proper or practicable means for its control or arrest. We believe it wise to work as much as possible by means of the local Boards of Health.

On receiving such notices they are first systematically recorded in our books, after which their receipt is courteously acknowledged, with thanks for promptness and completeness, where such thanks are due, with effort to secure promptness and completeness in future reports where there has been manifest delay in the one respect or lack in the other, and with special letters of advice or encouragement to the local Board where this seems necessary or desirable. In all cases we supply the local Board liberally with circulars for general distribution, treating of the nature and management of the particular disease that may be prevalent at the time in the locality, and we endeavor also to utilize the local press by securing the republication of such circulars through its means. Finally and chiefly, taking advantage of the prevalence of disease in any locality and using it as a text, we endeavor to educate both the local Boards of Health and the public in matters of general and special sanitation, and to create and build up that public sentiment in favor of the enactment and enforcement of sanitary laws, without which the simple existence of such laws upon the statute books has and can have no value whatever.

Dr. Bryce, replying for the Province of Ontario, said: The methods in practical operation in Ontario are very similar to those indicated by the last two speakers. Since 1884 there has practically been in every township a local Board, with powers extended to it by Provincial statute, and with further powers under a by-law, common to all, but liable to amendment by the municipal council. The powers of the local Boards are extensive and ample for dealing with all forms of infectious disease but experience has taught us that the very occasional outbreaks in the less populous municipalities, and ignorance of the duties which by law are imposed upon them, have frequently prevented Boards from taking such prompt action as the case demanded. The result has been that from the year 1884 amendments have yearly been adopted by the Legislature at the suggestion of the Board, which have made the relations between local Boards and the Provincial Board most intimate. In small-pox, etc., it has been the duty of Medical Health Officers (who have to be appointed where non-existant in a municipality, within five days after an order to appoint them has been laid upon the local Board, the alternative being their appointment by the Provincial Board at the expense of the municipality) to carry out the local laws and any special regulations which may be adopted by the Provincial Board. To complete this close relationship between the central executive and the local executive the clause of the Health Act prescribing the duties of the Provincial Board was amended in 1887 by the following clause:

6. Section 3 of the act passed in the forty-fifth year of Her Majesty's reign, chapter 29, is amended by inserting after the word "disease," in the fourteenth line, the following: "They shall enquire into the measures which are being taken by local Boards for the limitation of any existing dangerous, contagious, or infectious disease, through powers conferred upon said local Boards by any Public Health act, and should it appear that no efficient measures are being taken and that the

said powers are not being enforced, it shall be competent for the Provincial Board, in the interests of the public health, to require the local Board to exercise and enforce any of the said powers which, in the opinion of the Provincial Board, the urgency of the case demands; and in any such case where the local Board, after request by the Provincial Board, neglect or refuse to exercise their powers, the Provincial Board may, with the approval of the Minister of the Department under which the Board is for the time being acting, exercise and enforce at the expense of the municipality any of the powers of local Boards which under the circumstances they may consider necessary."

A very general consent is yielded to these provisions of the law, and we are endeavoring, under the *ægis* of this clause, to force the general adoption of thorough inspection of milk and meat by the large municipalities, and to still further protect the public against the introduction of diphtheria by these sources. We recommend this line of action to the various State Boards, with regard to obtaining increased powers.

The next question taken up for consideration by the Conference was the following: What are the best methods for securing sanitary legislation?

Dr. Baker said that he thought it useful to remember that each member of the legislature is elected by a comparatively small proportion of the people in the State—the people living in one representative or senatorial district. The legislators represent the interests of the people in their own districts, and are not elected to represent the great general interests of the State, concerning which some of them have given little thought except as brought to their attention by the supposed interests of their constituents. Therefore, in order to secure the attention of legislators it is, as a rule, necessary that the subject shall be of interest to their own constituents, and when a proper subject is properly placed before a legislator by one or more of his own constituents, his experience is that the legislator usually gives the subject respectful consideration, and his support, if the proposition is not inconsistent with his convictions. In Michigan there are a large number of health officers and other persons interested in sanitary progress, and when these persons in different parts of the State use their influence upon their respective members of the legislature, it has force. Sanitary conventions spread, among the people of localities where they are held, an influence which acts for good whenever legislation is proposed affecting the sanitary interests of the people of the State.

Dr. Lee said that defeat might perhaps teach a lesson where victory failed to instruct. The experience of the past winter had convinced him that one of the most important methods of obtaining legislation was to secure the interest and co-operation of a leader in each House. It will not do to depend on educating the people to a point where they would demand legislation in the interest of the public health. The process is too slow. The legislation itself must educate the popular mind. The Pennsylvania Board had the good fortune to obtain the services of a prominent and intelligent member of the House of Representatives, and under his able leadership all their measures passed that body. In the Senate, however, they were not successful in securing a champion, and the consequence was, that not a single one of their acts went through, except such as were absolutely essential to the continued existence of the Board. One single, strong man whom the mass of legislators are in the habit of following, is worth twenty who do little else than vote.

Dr. J. N. McCormack, of Kentucky, said: Our Board submits this question to the Conference because its members feel that they need information on the subject. Much better results have attended efforts to secure medical and sanitary legislation in some of the other States, and we have felt that there must be something in the methods employed, or in the attending circumstances, to account for this success. Formerly, our opposition came chiefly from members of the medical profession, but this source of trouble has been almost entirely removed. This grew almost entirely out of the fear which possessed the medical colleges of the country a few years ago that legislation would go too far in regulating the practice of medicine. Frank conferences with representatives from the schools, and a perfect understanding between them and us as to what was to be desired and what avoided, readily secured their co-operation, as well as that of the medical press, which is, of course, largely influenced by school interests.

A general outline of proposed new legislation is now sent to the various county Boards and leading physicians throughout the State in advance of the meeting of the Legislature, in order that members of that body may have the opinion of their home physician as to the merits of such legislation. The bills are then submitted to leading members of the two Houses for criticism and suggestions, in order that they may be as complete and free from objection as possible before they are offered or printed. We have succeeded much better with these methods in later years, but our laws are still very defective on many points, and we will be very thankful for suggestions from gentlemen present, who has large and successful experience in practical dealings with this subject, will make anything coming from them in regard to it of the highest value.

Dr. W. L. Schenck, of Kansas, said: The best methods of securing sanitary legislation doubtless differs somewhat in different States. Having almost wholly failed in Kansas, we are anxious to learn the secret of success.

We recognize that our first difficulty is with the medical profession. For example, the State Society of one school of medicine, (eclectic) resolved not long ago "that legislation on sanitary subjects is timely when the people demand it," and in all schools there seem to be those who think with the silversmith of Ephesus, who made shrines for Diana, "by this craft we have our wealth." Even among the better informed and more honorable physicians there is a lukewarmness that evidences a want of appreciation of the importance of preventive medicine and the relation of the profession to the public. We must educate and enthuse the profession.

The average legislator is superior to education. The moment he has received the franchises of his district he springs, like Minerva from the brain of Jupiter, fully fledged, and is indignant at the intimation that there is anything he does not fully comprehend, and is even suspicious of his family physician if he suggests sanitary legislation. I met a fair example of this kind of legislators a few weeks ago. The Hon. F. was spoken to by a member of his State Board of Health, when he replied "Oh, my God! don't bore me about that. When I was in the Senate a set of d—d cranks bored me to death." The cranks were a committee of the most intelligent sanitarians in the State. The Senator couldn't tell the difference between carbonic acid gas and oxygen.

Education must go back of the legislator and teach the people the vital importance of sanitary law. Sanitary science must be taught more thoroughly in our medical schools, and through the physician come to the public school and the people.

It is so poorly comprehended that even in those States where State Boards of Health are established and sanitary laws enacted they stand on sandy foundations.

Dr. F. F. Gary, of South Carolina, in replying to the question, "What are the Best Methods of Securing Sanitary Legislation?" said: Through organized Health Boards. I believe in thorough organization of National, State, and Municipal Boards of Health. As medical men are the most advanced and best acquainted with sanitary science let them, wherever there is a medical society or association, *organize* and secure a State Board of Health, then local Boards. Now let each State Board co-operate in securing a National Board, under the sanction of Congress, with authority to act in conjunction with State Boards of Health. After a State Board is organized let the people be educated to the extent of their ability, because every industry, as well as our material prosperity, is largely dependent upon public health. Let them be taught that public health means much more than sewerage or lot inspection. It embraces our whole physical existence. And let each Board discuss what sanitary laws are needed and call the attention, *through one of their members of the Legislature,* to their wants. It is astonishing how much ignorance exists among the average Legislators and how reluctant they are to appropriate money for such an object. We must educate them and be able to show the importance of such legislation. If we can succeed in electing some of our profession to the Legislature so much the better. A few members can wield a great influence in shaping appropriate legislation if they are in earnest. We want a National Board to whom can be referred all matters of a National character, such as regulations for quarantine that would protect the public health with the least injury to vested rights and commercial enterprises; something uniform in action and effective in its results.

Dr. Henry B. Baker, for the committee appointed to draft a Constitution and By-Laws for the Conference, made a brief verbal report and submitted the following recommendation which was by unanimous vote approved in this resolution:

Resolved, That representatives of State Boards of Health which have no appropriations and consequently are inactive, be assured that they will be cordially welcomed to join with us in our deliberations, and will not be expected to contribute funds for the maintenance of this organization.

REPORT OF COMMITTEE ON OBITUARY RESOLUTIONS.

The Committee to which was assigned the grateful duty of preparing resolutions of respect to the memory of members of State Boards of Health deceased during the past year, begs leave respectfully, to report the following resolutions:

Resolved, That, in the death of Dr. Edward William Germer, late President of the State Board of Health of Pennsylvania, this Conference has been deprived of the services and counsel of one whose wise and emphatic utterances were always listened to with pleasure and respect.

Resolved, That few sanitarians in this country were more thoroughly versed in the principles and imbued with the spirit of hygienic reform.

Resolved, That the entire devotion of his time and energies to his duties as Health Officer of his own city, and as member of the State Board of Health of his State often to the injury of his private interests, and there is reason to fear, with the result of shortening his days, the noble courage with which he faced epidemics, acting, as has been well said in one instance, as "health officer, physician, nurse and undertaker," commend him as representing the highest type of the practical sanitarian and the Christian man.

Resolved, That this Conference desires to extend to the State Board of Health of Pennsylvania, its appreciation of the loss sustained in the death of so valuable a member—and to the family of the deceased, its sincere sympathy with them in the bereavement of one whose kindly nature and ready sympathies so endeared him to all who knew him.

Resolved, That in the recent death of Dr. D. W. Stormont, of the State of Kansas, preventive medicine has lost a warm friend and an earnest supporter.

Resolved, That in their great loss we sympathize with his family, his co-laborers of the Kansas State Board, and the commonwealth of Kansas.

John S. Rauch.
W. L. Schenck. } *Committee.*
Benj. Lee.

REPORT TO THE INTERNATIONAL CONFERENCE OF STATE BOARDS ON NOTIFICATION OF INFECTIOUS DISEASE.

Your Committee begs leave to report the following:

Resolved, 1. That the Conference reaffirms the principles contained in the resoutions adopted by it at its meeting in Toronto, in 1886.

2. That the communicable diseases hereinafter mentioned, prevalent in certain areas or which tend to spread along certain lines of travel, be reported to all State and Provincial Boards within said area or along said lines of communication.

3. That in the instance of small-pox, cholera, yellow fever and typhoid fever, reports be at once forwarded, either by mail or telegraph, as the urgency of the case may demand; and further that in the instance of diphtheria, scarlatina, typhoid fever, anthrax or glanders, weekly reports, when possible, be supplied, in which shall be indicated, as far as known, the places implicated and the degree of prevalence.

All of which is respectfully submitted.

Peter H. Bryce,
Henry B. Baker,
J. Berrien Lindsley, } *Committee.*
Benj. Lee,
J. T. Reeve,
E. M. Hunt.

The report having been read it was voted that the vote, on its adoption, be taken by States. The vote being so taken was unanimous in its favor by all the States and Provinces represented by delegates present.

The following resolution, offered by Dr. Reeve, of Wisconsin, and amended by Dr. Lee, of Pennsylvania, was adopted:

Resolved, That the Secretary of this Conference be requested to send copies of the resolution on Inter-State notification of contagious diseases to the Executive Officers of all Boards of Health belonging to this Conference, and to request from each of such Boards not here represented a vote upon the same for record as an appendix to the minutes of this meeting.

Henry B. Baker, A.M., M.D., Secretary of the Michigan State Board of Health, reported on the "New Means" of restricting dangerous communicable diseases:

At the meeting of the Conference of State Boards of Health in Toronto, in 1886, I had the honor of reporting on the subject of "Success in Restricting Communicable Diseases," and in doing so dwelt mainly upon the work with which I was most familiar, namely: That in Michigan. The success in Michigan seemed to me to be proved by the record of deaths reported to the Secretary of State. Incidentally it appeared that the success was greater under one method than under another method of work; therefore, the most complete and successful method was mentioned, whereupon Dr. Hewitt, of Minnesota, said: "That if it was true that there had been a dimunition in disease in Michigan since the organization of the State Board of Health, owing to the distribution of circulars and other documents, then there was a new means of prevention."* Dr. Hewitt said he "thought the distribution of circulars was not of so much account as the distribution of men." Although I do not suppose that at present there is a State in this Union where there is sent to localities where communicable diseases occur such a distribution of men able to give the specific information contained in any one of the several documents issued by one of our State Boards of Health, yet Dr. Hewitt's remark appears worthy of further consideration, and I have collected a few facts and thoughts bearing upon the proposition indicating about the number of men required in Michigan to carry into effect the "distribution of men" suggested by Dr. Hewitt.

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* Page 53 of Proceedings of Conference at Toronto.

TABLE I.

NUMBER OF PLACES IN MICHIGAN AT WHICH COMMUNICABLE DISEASES WERE REPORTED PRESENT DURING EACH WEEK IN 1886.

Week ending		Diphtheria.	Scarlet Fever.	Typhoid Fever.	Measles.	Small-pox.
January	9	26	9	2	1	0
	16	28	18	3	3	0
	23	25	25	3	5	0
	30	23	18	6	4	0
February	6	28	22	4	7	0
	13	23	31	5	5	0
	20	28	24	4	3	0
	27	17	16	3	3	0
March	6	17	22	5	3	0
	13	13	17	5	1	0
	20	16	16	6	4	0
	27	15	14	3	7	0
April	3	16	14	5	4	0
	10	18	15	3	6	0
	17	18	12	1	3	0
	24	18	13	1	5	0
May	1	17	15	2	5	0
	8	21	11	4	9	0
	15	18	14	3	9	0
	22	20	15	4	9	0
	29	23	22	2	8	0
June	5	22	24	2	6	1
	12	13	16	2	8	2
	19	19	15	1	5	1
	26	14	14	4	6	2
July	3	11	12	2	3	2
	10	16	13	6	1	2
	17	12	9	6	4	2
	24	19	9	8	5	2
	31	16	10	9	6	2
August	7	14	13	11	5	2
	14	23	11	14	7	2
	21	15	12	16	5	2
	28	20	12	21	5	2
September	4	21	9	17	8	3
	11	23	11	21	5	1
	18	28	12	24	6	1
	25	28	12	19	7	1
October	2	27	12	23	3	1
	9	26	16	20	3	1
	16	26	20	19	5	1
	23	42	18	20	3	1
	30	36	21	15	4	1
November	6	25	20	18	6	1
	13	33	17	23	9	1
	20	32	19	19	4	1
	27	34	21	11	4	1
December	4	41	23	15	6	1
	11	30	14	11	6	1
	18	24	15	11	6	1
	25	29	21	10	4	0
1887. January	1	23	13	6	10	0
Total,		1170	827	478	269	42
Av. per week,		22½	15 47-52	9 5-26	5 9-52	21-26

Taking the sum of the averages in Table I as representing the total number of places in which communicable diseases were reported each week, we have a total of fifty-four places per week, at which one or more of the diseases were reported present. This shows too many places, however, as at Detroit and a few other places two of these diseases are present nearly all of the time, and a Health Officer is acting, more or less, all the time.

Selecting a few weeks as typical of the different seasons of the year, I have prepared the Table II to show the number of *different* places at which the diseases were reported present, counting each locality but once. Thus the places at which scarlet fever, typhoid fever, measles, and small-pox are reported are each additional to and distinct from those reporting diphtheria or any other communicable disease.

TABLE II.

Average Number of Places where Communicable Diseases were Reported in 1886.

Weeks ending	Diphtheria.	Scarlet Fever.	Typhoid Fever.	Measles.	Small-pox.	Total.
January 16	28	13 additional.	1 additional.	1 additional.	0 additional.	43
June 19	19	11 “	0 “	2 “	1 “	33
October 16	26	14 “	16 “	1 “	0 “	57
Dec. 18	24	9 “	6 “	2 “	0 “	41
Totals,	97	47 additional.	23 additional.	6 additional.	6 additional.	174
Averages,	24¼	11¾ “	5¾ “	1½ “	¼ “	43½

Table II shows an average for each week of forty-three separate and distinct places at which one or more of these communicable diseases were reported present; and this number, forty-three, divided by the number of places which an expert could in each week visit and perform his service, will indicate the number of experts which would have been required for the proposed "distribution of men" in Michigan in 1886. The localities are somewhat widely scattered; but, perhaps, an expert might visit and act at four places per week, in which case eleven men would thus be constantly employed. One question bearing upon Dr. Hewitt's proposition is the expense; another question is one in Social Science, namely: Whether it is best for a central office to do the main work of combating contagious diseases or whether it is best that each locality should be trained to do this for itself. To this last question I have no hesitation in saying that, in my opinion, it is best to teach the localities to do this for themselves. But if the central office can afford the expense, it may be practicable, and if so, it seems to me it would be very useful to so far adopt Dr. Hewitt's suggestion as to have one expert, or more *sanitary inspectors*, constantly traveling from place to place to inspect the work of disinfection, etc., in the localities. Thus far very little of such work has been done in Michigan. We have once had a well-informed Health Officer visit a distant place to aid in restricting diphtheria, and the disease was restricted. Two or three times we have had an expert visit a locality to aid in restricting small-pox. I have visited a few places to investigate certain communicable diseases; but, as a rule, we have relied upon the mail, the telegraph, and the telephone from the office of the State Board to the local Health Officer, that by law is required to be appointed in every township, city, and village in Michigan, over fourteen hundred organizations in all, the majority of which have complied with the law.

You have probably noticed that the "New Means of Prevention" treated of in this paper is not altogether the distribution of documents which Dr. Hewitt thus characterized, but it is in great part the "distribution of men" suggested by Dr. Hewitt. Several of our State Boards of Health have distributed documents, and Michigan makes no claim that such distribution is now a new means of prevention; yet we do claim that statistics of sickness and deaths in Michigan in 1886, collected since the last meeting of this Conference, conclusively show that there was a large saving of life and health in Michigan in the year 1886 from scarlet fever, and especially from diphtheria, in certain localities where the directions contained in the pamphlets sent and distributed in these localities were carried into effect. This great saving of life and health was, we believe, in a considerable degree, due to the distribution of documents to the neighbors of persons sick as well as to the Health Officers. If, by means of statistics or otherwise, the "distribution of men" can be shown to promise better results, we should hail it as a great blessing to humanity.

UNFINISHED BUSINESS.

Dr. A. G. Young, of the Committee on the codification of the Health Laws of the different States and Provinces, made a brief report of progress and the Committee was by vote continued.

On call upon the Committee on "collective investigation of disease,"

Dr. Fisher said: 'That when his appointment upon that Committee became known to him he said to himself, that on his part he would endeavor to draw up a statement presenting reasons why a method of collective investigation, such as proposed, might be productive of good results, in the acquirement of further knowledge in relation to the causes, nature and treatment of that most universal and most destructive disease, pulmonary consumption.

This statement to be followed by a series of inquiries, formulated with explanatory remarks, so as to keep clearly in the minds of the practitioners of medicine, to whom such inquiries might be sent, the scope and purpose of the investigation, and that *facts* only should be reported, based on careful observation and experience.

Then to send copies of such paper to each of the other members of the Committee for such modification and additions as might be suggested by each, and upon the return of such amended copies to combine the valuable suggestions of all the members in one plan or proposition for report to this Conference, and for still further change by the Conference as might be deemed best. But few opportunities occurred for giving the subject attention, and short ones at that, but the more it was considered the more important the method became, the field of investigation seemed to lengthen and widen and the scope of inquiry broaden.

The magnitude of constructing a judicious plan for accomplishing the object desired was formidably realized.

How was he to present questions, at once concise and explicit, that should cover the etiology of pulmonary consumption in relation to heredity, to atmospheric conditions as to dryness or humidity, suspension of floating matter, organic or inorganic, rarity or density, temperature, altitude and ozone. Conditions, topographical and telluric. Conditions of society, demographical, occupation, poverty, intemperance, social vices, hard labor, maternity, the question of communicability through organic contagia, etc.

He then felt that he ought, in justice to the importance of the results to be obtained, and also in justice to himself as in part a proposer of the scheme, to give the subject extended consideration as to time and study, and that decision or sentiment was the rock on which the contemplated project split. No time for such extended study had been allowed him.

He did not make these remarks as an apology for not reporting a matured plan as designated and desired. It was rather a conscientious explanation. For he could say positively and absolutely that he had been incessantly engaged in all the working hours, and also with much encroachment on the hours of sleep and rest since the meeting at Toronto, except when disabled physically and mentally by disease.

No one could regret more than himself the failure to bring before this Conference a matured plan for the purpose designed.

Upon motion, Dr. Fisher was excused and the Committee continued.

Dr. Baker was asked to report upon "blank forms for uniform system of vital statistics," and stated that the announcement was an error—that at the Toronto meeting he had reported on that subject, and had expressed regret that it was so narrow, whereupon the whole subject of "vital statistics" had been assigned to him. Upon the topic announced for the meeting he had nothing new to report.

On motion, it was voted that Dr. Baker be granted further time to make a report on the subject of vital statistics.

Dr. Baker, of Michigan, moved, and it was voted: That the thanks of the Conference be given to Dr. Metcalf, of Indiana, for printing the proceedings of the last Conference, in 1886.

Dr. Probst, Secretary of the Ohio State Board, offered to print the proceedings of the present Conference on the same terms that they were printed last year.

On motion the offer of Dr. Probst was accepted.

On motion of Dr. Probst it was voted: That an assessment of five dollars be made on each State Board of Health to defray the expenses of the Conference for the ensuing year.

The Conference next proceeded to the election of officers, which resulted as follows:

For President, Dr. J. N. McCormack, of Kentucky.

For Secretary, Dr. C. A Lindsley, of Connecticut.

THE NEXT PLACE OF MEETING.

Dr. Sharp, of Ohio, gave a cordial invitation to the Conference to hold its next meeting in Cincinnati of that State, and moved that it be held in June on the first Tuesday, at the time of the meeting of the American Medical Association.

Dr. Hunt, of New Jersey, urgently opposed meeting at the same time and place of the meeting of any other association.

Dr. Lindsley, of Tennessee, advocated holding the meeting before the time appointed for the American Medical Association, but at the same place.

Dr. Sharp amended the motion by substituting Monday for Tuesday.

Dr. Schenck moved to amend by substituting the Friday after the meeting of the association.

Dr. Hunt opposed the amendments and advocated meeting on the Friday before that of the Medical Association.

Dr. Reeve, of Wisconsin, moved that when this Conference adjourns, it be at the call ot the President and Secretary.

Dr. Baker, of Michigan, strongly urged that the meeting be held in Cincinnati, and at the time the Medical Association met, for the distinct purpose of building up by the presence and influence of the Conference, the Hygienic Section of the Medical Association.

The President invited Dr. Hunt to take the Chair. He then spoke emphatically in favor of holding the meetings of the Conference entirely independent of all other organizations.

After some further debate it was voted: That when this Conference adjourns it will meet at Cincinnati, Ohio, in June, 1888, on the Friday evening preceding the meeting of the American Medical Association.

Mr. W. D. Anderson addressed the Conference on the subject of celebrating the one hundredth anniversary of the Constitution of the United States and the four hundredth of the discovery of America by Columbus.

At the conclusion of his remarks it was voted: That this Conference heartily approve of the proposed Centennial celebration and extend its thanks to Mr. Anderson for his address.

No further business offering, the meeting adjourned.

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